Irish Cardiac Society

65th Annual General Meeting
of the
Irish Cardiac Society

in association with

Cardiac Clinical Physiologists
Irish Atherosclerosis Society
Irish Nurses Cardiovascular Association

PROGRAMME

16th – 18th October 2014
Sheraton Hotel Athlone, Co. Westmeath

www.irishcardiacsociety.com

Officers

Dr. Donal Murray	*President*
Dr. Nicola Johnston	*Hon. Secretary*
Dr. Andrew Maree	*Hon. Treasurer*

Council Members

Prof. Kenneth McDonald (incoming President)

Dr. James Crowley

Dr. Caroline Daly

Dr. Peter Kelly

Dr. Stephen McMechan

Dr. John Riddell

Dr. Martin Quinn

Dr. Angie Brown (IHF Representative)

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Thursday, 16th October 2014

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Thursday October 16th 2014

Irish Nurses Cardiovascular Association

"MIND YOUR HEART"..... THE CYCLE OF CARE

10.00- 10.30	Registration and Coffee
10.30- 10.35	**Welcome** Emer Lodge, President, INCA
10.35-10.40	**Welcome** Dr. Donal Murray, President, Irish Cardiac Society
10.40- 11.00	**'Hitting the Target – Cardiovascular Disease Risk Reduction'** Dr. Gerard Flaherty, School of Medicine, NUI, Galway
11.00- 11.20	**Development of ACS App.** Dr. Sharon O'Donnell, School Of Nursing and Midwifery, Trinity College
11.20- 11.40	**Acute Coronary Syndrome: Stent vs CABG** Dr.AideenMcGough, Transplant Registrar, Mater Hospital, Dublin
11.40- 12.00	**'Behavioural Change is Difficult – How it may be maximised'** Professor Margaret Cupples, Queens University, Belfast
12.00- 12.30	**Patient experience of ACS – Negative V's Positive**
12.30- 14.00	**Lunch**
14.00- 14.15	**Overview of CCNAP** Catherine Bellew CNM 2, Cardiac Rehabilitation, Connolly Hospital,Blanchardstown, Dublin
14.15- 14.35	**'Update on what's happening with implementing the 2012 Prevention Guidelines'** Mary Keirns CNM 2, Cardiac Rehabilitation, St. James Hospital, Dublin
14.35- 14.55	**Management of Hypertension in the Community.** Gillian Berry, Hypertension Nurse Specialist, West of Ireland Croi
14.55- 15.15	**Cardiac Rehab-'Where from here'** Jenni Jones, Director of Croi Prevention Programmes
15.15- 15.25	**Announcement of Best Poster and Best Abstract**
	Close of Meeting

Thursday October 16th 2014

Irish Cardiac Society Scientific Sessions

Session 1:	**Interventional Cardiology** Chair: Prof. David Foley / Dr. Simon Wash
18.30 – 21.00:	Discussion & Case Reviews
Session 2:	**Electrophysiology** Chair: Prof. David Keane
18.30 – 21.00:	Discussion & Case Reviews

Friday October 17th 2014

The 15th Annual Cardiac Clinical Physiology Meeting

8.30 – 9.25	**Registration**
9.25 – 9.30	**Opening of Meeting**
	Session I
9.30 -10.00	**Management of Heart Failure - Update** Bronagh Travers, Heart Failure CNS, St Vincent's University Hospital
10.00-10.30	**To be confirmed**
10.30-11.00	**Coffee and trade stands**
11.00-11.30	**Tales from the Crypt and other weird anomalies** Dr Heiko Kindler, Consultant Cardiologist, Eagle Lodge Cardiology
11.30-12.00	**Update on Arrhythmias** Prof David Keane, Consultant Cardiologist, St Vincent's University Hospital
12.00-12.45	**Cardiology Bursary Award**
12.45-14.00	**Lunch and trade stands**
	Session III
14.00-14.30	**The Future of Percutaneous Valve Therapy** Dr Darren Mylotte, Consultant Cardiologist, University Hospital Galway
14.30-14.55	**Research – How to go about it** Q&A Session – Panel includes Dr Gerard King, Cathal Breen
14.55 -15.10	**Eye tracking technology** – Cathal Breen, UUJ
15.10-15.25	**Departmental Accreditation** – Donal O'Dea, AMNCH Tallaght
15.25-15.40	**Echo in Africa** – Robbie Ryan, Mater Hospital, Dublin
15.40	**Meeting end** – followed by IICMS Faculty of Cardiology AGM

IAS / ICS Scientific Session 2014

Hoey Suite 2

PROGRAMME

13.30 – 13.45:	Registration & Coffee
13:45:	Welcome: Dr Ian Menown
13.45 – 14.45:	Chair: Dr Vincent Maher
	IAS 2014 Lecture:
	New Therapeutic approaches for the Dyslipidaemias Professor Alan Rees University Hospital of Wales, Cardiff NICE lipid guideline development group, JBS3 guideline group
14.45- 15.45:	Chairs: Prof MPS Varma, Dr A Hamilton, Prof G Tomkin Clinical vignettes & research

Irish Cardiac Society Scientific Sessions

08.30 - 09.00	Registration
08.55 - 09.00:	Welcome from Dr. Donal Murray, President
Session 3:	**Electrophysiology** Chair: Dr. Peter Kelly
09.00-09.30:	**Management of patients with complex arrhythmias: the expanding role of ablation** Dr. Conor McCann Mater Private Hospital, Dublin
09.30-10.30:	**Oral Presentations**

1. Arrhythmias detected by implantable loop recorders; a retrospective review of 101 patients
   Beirne AM, McKeag N, Dooley M, Ashfield K, Roberts MJ
   Royal Victoria Hospital

2. Catheter ablation versus medical therapy for patients with symptomatic atrial fibrillation: systematic review and meta-analysis of randomized controlled trials
   [1]Tuohy S, [2]Moran D, [1]O'Donnell M, [2]Galvin J
   [1]Clinical Research Facility NUI Galway
   [2]Mater Misericordiae Hospital

3. Prevalence of ion channel mutations and diagnostic yield of genetic testing in an Irish national sudden cardiac death family screening programme
   Tuohy S, Moran D, Buckley U, McGorrian C, Galvin J
   Mater Misericordiae Hospital

4. Use of novel oral anticoagulants results in shorter waiting times for elective DC Cardioversion
   Collison D, Walsh R, Beecher S, Smyth Y, Crowley J
   Department of Cardiology, University Hospital Galway, Galway, Ireland

5. Close relationship of the left atrium to the lungs - a potential hazard during left atrial radiofrequency ablation
   Walsh K, Tuite D, Fahy G
   Cork University Hospital

6. Rate of infection of cardiovascular implantable electronic devices over a year follow-up at a single Irish center
   Adeel M.Y, Matiullah S, Salim T, Humra M, ElHanan M, Cuddy S, Gumbrielle T
   Cardiology Department, Beaumont Hospital, Dublin

10.30 – 11.00: **Poster Presentation**
Exhibition / Coffee

7. Post ICD Implantation – audit of reasons for de-activation of defibrillation therapies
Murphy L, Salim TS, Sheahan R, Gumbrielle T, Mcadam BF
Beaumont Hospital Dublin

8. Spectrum of Long QT gene mutations in the republic of Ireland
[1,2]Moran D, [3]Tuohy S, [4]Noonan B, [1]Mahon N, [1,5]O'Neill J, [6]Ward D, [4] McGorrian C, [7]Green A, [1,5]Galvin J
[1]Mater Misericordiae Hospital
[2]Adelaide and Meath Incorporating the National Children's Hospital Tallaght
[3]Galway University Hospital
[4]Mater Family Heart Screening Clinic
[5]Connolly Hospital
[6]Cardiac Risk in Young Persons Clinic
[7]National Centre for Medical Genetics, Crumlin

9. Prospective evaluation of QT prolongation in patients admitted to Beaumont Hospital, Dublin, Ireland
Bajrangee A, Khalifa W, Mustafa G, Mahabir S, McAdam B
Beaumont Hospital

10. Close relationship of the left main coronary artery to the left atrium - a potential hazard of left atrial radiofrequency ablation
Walsh K, Tuite D, Curtin R, Fahy G
Cork University Hospital

11. Sudden cardiac death; A 5 year analysis in the cardiac risk in younger persons (CRYP) centre
Ward D, Connaughton H, Reynolds A, Mulcahy D
Tallaght Hospital

12. Five years of genetic testing in the cardiac risk in younger persons centre: A retrospective analysis
[1]Connaughton H, [1]Moran D, [2]Green A, [1]Mulcahy D, [1]Ward D
[1]Tallaght Hospital
[2]Crumlin Hospital

13. Safety and Cost Effectiveness of Day Case Ablation in Ireland
Bajrangee A, Yxin Chan G, Gough D, G Mustafa, Foley D, Sheahan R
Beaumont Hospital

14. Cardiac catheterisation laboratory activation for primary PCI: cases not leading to intervention. A mixed group in need of a standardised classification
O' Carroll G, O' Brien J, Twomey K, Evans L, Kearney P
Department of Cardiology, Cork University Hospital, Cork, Ireland

15. False activation of the cardiac catheterization laboratory for primary percutaneous coronary intervention
[1]Konje S, [2]Yagoub H, [2]Aherne C, [2]Kiernan T
[1]University of Limerick
[2]University Hospital Limerick

16. The use of cardiac troponin in the emergency department - millions wasted?
O'Brien J, Aoko O, Maleady K, Broughall M, Foynes Reynolds J, Keelan E, Galvin J, O' Neill J
Connolly Hospital

17. Trends in percutaneous coronary intervention and angiography in Ireland, 2004-2011: implications for Ireland and Europe
[1]Jennings S, [2]Bennett K, [1]Shelly E, [3]Kearney P, [4]Daly K, [5]Fennell W
[1]Department of Public Health Dublin
[2]Department of Pharmacology and Therapeutics St. James's Hospital
[3]Cork University Hospital
[4]University College Hospital Galway,
[5]Bon Secours Hospital Cork

18. Audit of treatment duration of dual anti-platelet therapy in patients post ACS and Elective PCI. A single centre experience in Beaumont Hospital
Cuddy S, Collis R, Matiullah S, Salim T, Elhanan M, Hamra M, Sheahan R, Foley D, McAdam B
Beaumont Hospital

19. 1 year mortality in patients presenting with ST- Elevation Myocardial Infarction- Prediction of outcome using the SYNTAX score
Kennedy M, Colleran R, Roy AK, Lim R, Hassan S, Schmitt A, Sugrue D, McCann H, Keelan T, Galvin J, O'Neill J, Keelan P, Foley D, Blake G, Mahon N
Department of Cardiology, Mater Misericordiae University Hospital, Dublin

20. Changes in STEMI management in Mid-Western Ireland with the advent of modern PCI facilities
[1]Weitemeyer R, [1]Gillen R, [1]Murphy S, [2]Aherne C, [1]Yagoub H, [1]Hannigan A, [1]Kiernan T
[1]University of Limerick GEMS
[2]University Hospital Limerick

21. Management and outcomes of significant non-culprit coronary lesions in STEMI: A retrospective study
[1]Weitemeyer R, [1]Murphy S, [1]Gillen R, [2]Aherne C, [3]Abusalma, Y, [1]Yagoub H, [1]Hannigan A, [1]Kiernan T
[1]University of Limerick GEMS
[2]University Hospital Limerick
[3]Galway University Hospital

22. Prospective analysis of serial high sensitivity Troponin T values and correlation with outcomes incorporating cartesian slope mapping as a risk stratification tool
Kiernan T, Barrett M
University Hospital Limerick

Session 4: **Revascularisation**
Chair: Dr. James Crowley

11.00 – 11.30: **Transcatheter Heart Valve Therapies: Looking Forward**
Dr. Darren Mylotte
University College Hospital Galway

11.30 – 12.30: **Oral Presentations**

23. Coronary chronic total occlusions: A 2 year experience from a UK chronic total occlusion registry
[1]Douglas H, [1]Cole B, [1]Hanratty C, [2]Spratt J, [2]Wilson W, [1]Walsh S
[1]Belfast Trust
[2]Edinburgh Heart Centre

24. Does successful CTO percutaneous revascularization improve anginal symptoms, quality of life and LV systolic function?
Elhanan M, Hamra M, Fitzgerald S, Foley D
Beaumont Hospital

25. Cardiac Troponin testing in the ED; a study of indications, clinical context and impact on treatment
Khan I
Mater University Hospital

26. Frequency and outcome of false activation cardiac catheterisations in a primary percutaneous coronary intervention service
Tweedie J, Forde C, Herity N
Belfast Trust Primary PCI Team

27. Suspected left bundle branch block equivalent STEMI: analysis in a primary PCI programme
O' Brien J, O' Carroll G, Twomey K, Evans L, Kearney P
Cork University Hospital

28. Impact of multi-vessel disease on patients receiving percutaneous coronary intervention or thrombolysis for acute STEMI: a retrospective analysis
[1]Gillen R, [1]Weitemeyer R, [1]Murphy S, [2]Aherne C, [1]Yagoub H, [1]Hannigan A, [1]Kiernan T
[1]University of Limerick GEMS
[2]University Hospital Limerick

12.30 – 14.00: **Lunch / Exhibition**

Session 5: **Imaging / Structural**
Chair: Dr. Nicola Johnston

14.00 – 14.30: **3D echo imaging and its role in structural intervention**
Dr. Bushra Rana, Papworth Hospital Cambridge UK

14.30 – 15.30: **Oral Presentations**

29. Improvements in radial strain detected by speckle tracking echocardiography in patients with hereditary haemochromatosis following venesection
Byrne D, Walsh JP, King G, Ellis L, McKiernan S, Norris S, Murphy RT
St. James's Hospital

30. Evaluating the impact of the revision of the taskforce criteria for the diagnosis of arrhythmogenic right ventricular cardiomyopathy (ARVC)
[1]Cole B, 1Douglas H, [1]Rodden S, [2]Horan P,
[3]Harbison M, [1]Johnston N, [1]Dixon L
[1]Cardiology Department Royal Victoria Hospital
[2]Cardiology Department Antrim Area Hospital
[3]Queen's University

31. Prospective study of the Belfast TAVI early discharge algorithm
Noad R, Johnston N, Jeganathan R, Manoharan G, Spence M
Belfast Trust

32. Transaortic TAVI is a valid alternative to the transapical approach with comparable procedural outcomes
[1]O' Sullivan KE, [2]Segurado R, [1]Sugrue D, [1]Hurley J
[1]Mater Private Hospital, Dublin
[2]Centre for Support and Training in Analysis & Research, UCD

33. Impact of mitral regurgitation on clinical outcomes of patients with low-flow, low-gradient severe aortic stenosis undergoing transcatheter aortic valve implantation
O' Sullivan C
Bern University Hospital

34. Clinical outcomes of patients with low-flow, low-gradient severe aortic stenosis according to treatment modality
O' Sullivan C
Bern University Hospital

15.30 – 16.00: **Poster Presentation**
Exhibition / Coffee

35. How effective are our standard tools for predicting new onset AF in a population at risk for Heart Failure
Mahon C, Waterhouse D, O'Hanlon R, O'Connell E, Tallon E, Ledwidge M, McDonald K
St. Vincent's University Hospital

36. Audit of time in therapeutic range with warfarin in patients with mechanical prosthetic heart valves
Feely O
RCPI

37. The utility of cardiovascular resonance imaging in the assessment of cardiac, pericardial and mediastinal masses: a 3 year experience
Douglas H, Cole B, Rodden S, Horan P, Harbison M, Dixon L, Johnston N
Belfast Trust

38. Incomplete right bundle branch block or a longer conduction pathway "A question of sport"
[1]King G, [2]Coen K, [1]Gannon S, [1]Fahy N, [1]Kindler H, [1]Clarke J
[1] Eagle Lodge Cardiology O' Connell Avenue Limerick
[2]Aut Even Hospital Limerick

39. Cardiac arrest due to acute coronary syndrome : a 4 year observational study of patient characteristics and outcomes
Gorecka M, Hanley A, Burke F, Nolan P, Crowley J
Galway University Hospital

40. Highly sensitive troponin T allows earlier diagnosis of myocardial infarction but this advantage is not achieved in the real world
Reid L, Shand J
Altnagelvin Hospital

41. An experience of a protocol based approach to the administration of vernakalant hydrochloride for patients undergoing rhythm control strategy for stable, recent onset, non valvular atrial fibrillation
Stoneman P, Sheahan R, Gilligan P, Cuddy S
Beaumont Hospital Dublin

42. Safety of a dual antiplatelet regimen following percutaneous left atrial appendage closure in high risk patients - a single-centre experience
Awadalla M, Hafiz H, Elhanan M
Beaumont Hospital

43. A retrospective analysis of the use of new oral anticoagulants (NOAC's) in a level 3 hospital
Wheen P, More C, Cotter P E
St. Luke's Hospital Kilkenny

44. Use and safety of novel oral-anticoagulants (NOACS) in the prophylaxis of stroke in non-valvular atrial fibrillation (NVAF): a review of prescribing practice and outcomes at the Belfast Health & Social Care Trust
[1]Monaghan M, [1]Goodwin K, [2] Proctor B, [2]Jackson M, [2]Monteith C, [1]Manoharan G
[1]Cardiology Royal Victoria Hospital
[2]Pharmacy and Cardiology Royal Victoria Hospital

45. Re-audit of Acute Kidney Injury (AKI) following contrast coronary angiography
Connolly M, McEneaney D, Morgan N, Menown IBA, Harbinson M
Cardiovascular Research Unit, Craigavon Cardiac Centre, Southern Trust, N Ireland, BT63 5QQ

46. "It hasn't really impacted on my life, it was only a mild heart attack". Patients presenting with NSTEMI lack understanding of their illness and have less motivation for lifestyle changes
[1]Donnelly P, [1]Dullaghan L, [2]Fitzsimons D, [3]McGeough M
[1]South Eastern Trust
[2]University of Ulster
[3]Belfast Trust

47. Atrial Fibrillation in the community
[1]Alkhalil M, [2]Cromie N
[1]Mater Hospital
[2]Queens University Belfast

48. Education in Atrial Fibrillation
[1]Alkhalil M, [2]Cromie N
[1]Mater Hospital
[2]Queen's University Hospital

49. Cardiac arrest due to cardiovascular disease: the impact of body temperature on cardiac function
[1]Gorecka M, [1]Hanley A, [2]Burke F, [1]Nolan P, [2]Jennings P, [1]Crowley J
[1]Cardiology Department Galway University Hospital,
[2]Intensive Care Unit, Galway University Hospital

50. Cardiac stress in Post Brain Injury Patients
Salim TS, Elhanan M, Cuddy S, Byrne R, O'Brien D, McAdam BF
Beaumont Hospital

Session 6: Brian Maurer Young Investigator Award
Chair: Dr. Donal Murray
Judges: Dr. Eric Isselbacher, Dr. Carol Wilson.

16.00 – 17.15: **Oral Presentations**

51. A comparison of Cardiac Computerised Tomography and Exercise Stress Electrocardiogram Test for the investigation of stable chest pain: the clinical Results of the CAPP Randomised Prospective Trial
[1,2]McKavanagh P, [1]Lusk L, [1]Ball PA, [3]Verghis RM, [3]Agus AM, [1]Trinick TR, [1]Duly E,1Walls GM, [3]Stevenson M, [1]James B, [1]Hamilton A, [2]Harbinson MT, [1,2]DonnellyPM.
[1]Ulster Hospital, South Eastern Health and Social Care Trust, Upper Newtownards Road, Dundonald, Belfast, BT16 1RH.
[2]Queen's University Belfast, Centre for Vision and Vascular Science, Institute of Clinical Science A, Royal Victoria Hospital Belfast, BT126BA.
[3]The Northern Ireland Clinical Trials Unit, Education and Research Centre, The Royal Hospitals, Grosvenor Road, Belfast, BT12 6BA

52. The Relationship of Cigarette Smoking with Inflammation and Subclinical Vascular Disease. The Multi-Ethnic Study of Atherosclerosis
[1]McEvoy JW, [1,2]Nasir K, [1,3]DeFilippis AP, [4]Lima J AC, [5]Bluemke D A, [6]Hundley G W, [7]Barr R, [8]Budoff M J, [9]Szklo M, [9]Navas-Acien A, [10]Polak J F,
[1]Blumenthal R S, [4,9]Post W S, [1]Blaha M J
[1]Ciccarone Center for the Prevention of Heart Disease, Johns Hopkins University, Baltimore, MD
[2]Center for Wellness and Prevention, Baptist Health South Florida, Miami Beach, FL
[3]Division of Cardiology, University of Louisville, Rudd Heart and Lung Center, Louisville, Kentucky, USA.
[4]Division of Cardiology, Johns Hopkins University, Baltimore, MD
[5]Radiology and Imaging Sciences, NIH, Bethesda, MD
[6]Cardiology, Wake Forest University Health Center, Winston-Salem, NC
[7]Division of General Medicine, Pulmonary Division; Department of Medicine and Department of Epidemiology, Columbia University Medical Center, New York, NY
[8]Los Angeles Biomedical Research Institute at Harbor-UCLA, UCLA, Los Angeles, CA
[9]Bloomberg School of Public Health, John Hopkins University, Baltimore, MD
[10]Department of Radiology, Tufts Medical Center, Tufts University School of Medicine, Boston, MA

53. Epigenetic modifying therapy for the treatment of cardiac fibrosis and hypertrophy
[1,2]Watson C, [1]Horgan S, [1]Neary R, [1]Collier P, [1]Tea I, [1]Glezeva N, [2]Ledwidge M, [2]McDonald K, [1]Baugh J
[1]School of Medicine & Medical Science, UCD Conway Institute, University College Dublin, Belfield, Dublin 4, Ireland
[2]Chronic Cardiovascular Disease Management Unit, St Vincent's Healthcare Group/St Michael's Hospital, Co. Dublin, Ireland

54. Comparison of lesion level decision making in the cath lab using hyperaemic and non-hyperemic pressure wire derivied indices of stenosis severity : The Verity-2 Study.
Hennigan B, Watkins S, Eteiba H, Lindsay M, McEntegart M, Berry C, Oldroyd K
Golden Jubilee National Hospital Glasgow

55. Effect of a polyphenol-rich diet on vascular function and other markers of cardiovascular risk
Noad R, McKinley M, Woodside J, McKeown P
Queens University Belfast

17.15 – 17.35: **ICS AGM**

17.45 – 18.45: **Stokes Lecture**
A Modern Understanding of Thoracic Aortic Aneurysms

Dr. Eric Isselbacher, Associate Director, MGH Heart Center Massachusetts General Hospital, Boston

19.45: **Reception**

20.30: **Dinner**

Saturday October 18th 2014

08.30 – 09.30: Cardiology Education & Training Update

Session 7: **Heart Failure**
Chair: Prof. Kenneth McDonald

09.30 – 10.00: **MCS in advanced heart failure - who, when and how to manage post implant**
Dr. Carmel Halley, Our Lady of Lourdes Hospital, Drogheda.

10.00 – 11.00: **Oral Presentations**

56. The role of doxycycline in asymptomatic left ventricular diastolic dysfunction
[1]Voon V, [2]Watson C, [2]Glezeva N, [1]Waterhouse D, [1]Bermingham M, [3]Wang J, [1]O' Hanlon R, [3]Gilmer J, [2]Baugh J, [1]McDonald K, [1]Ledwidge M
[1]St. Vincent's University Hospital
[2]The Conway Institute University College Dublin,
[3]School of Pharmacy and Pharmaceutical Sciences Trinity College Dublin

57. Tetranectin, a potential novel biomarker of heart failure, is expressed within the myocardium and associates with cardiac fibrosis
[1]Glezeva N, [1]O'Reilly J, [1]Tea I, [2]Collier P,
[2]Ledwidge M, [2]McDonald K, [1]Baugh J, [1]Watson C.
[1]UCD Conway Institute, Heart Failure Unit,
[2]St. Vincent's Hospital Dublin

58. Identification of a circulating miRNA signature that can differentiate heart failure sub-classes
[1]O'Reilly J, [1]Watson C, [2]Gupta S, [1]O'Connell E, [2]Fendrich J,
[1]Glezeva N, [2]Thum S, [1]Gallagher J, [1]Ledwidge M, [2]Thum T, [1]Mc Donald K
[1]University College Dublin, Ireland
[2]Medical School Hanover, Germany

59. The impact of natriuretic peptide-based screening and collaborative care on healthcare costs: an analysis of the STOP-HF study
[1]Ledwidge M, [1]O'Connell E, [1]Gallagher J,
[2]Tilson L,[1]Voon V, [1]Bermingham M, [1]Tallon E,
[1]Watson C, 4O'Hanlon R, [2]Barry M, [1]Mc Donald K
[1]Chronic Cardiovascular Disease Management Unit, St. Vincent's Hospital Dublin
[2]National Centre for Pharmaeconomics St. James's Hospital
[3]Conway Institute UCD
[4]Centre for Magnetic Resonance, Blackrock Clinic Dublin

60. New heart failure diagnosis in the community results in a loss of one month of life per year over five years
[1]James S, [2]Barton D, [2]Gallagher J, [2]O'Connell E, [2]Voon V,

[1]Waterhouse D, [1]Murphy T, [3]Ledwidge M, 4O'Hanlon R, [1]McDonald K
[1]St. Vincent's University Hospital
[2]Heart Failure Unit, St. Michael's Hospital Dun Laoghaire
[3]The Heart Beat Trust Dun Laoghaire
[4]Blackrock Clinic Dublin

61. Medication adherence in heart failure: is self-report as reliable as objective measures and is there a clinical impact
Bermingham M, O'Hanlon R, McDonald K,
Ledwidge M
Heart Failure Unit St. Vincent's University Hospital Dublin

11.00 – 11.30: **Poster Presentation**
Exhibition / Coffee

62. The ECG in the diagnosis of heart failure
Murphy T, Gallagher J, James S, O'Connell E, Waterhouse D, Voon V, Ledwidge M, O'Hanlon R, Mc Donald K
St. Vincent's University Hospital

63. "False positive" screens using natriuretic peptide for stage B heart failure have equal risk for subsequent cardiovascular events; a report from the STOP-HF cohort
O'Brien J, O'Connell E, Tallon E, Watson C, O'Hanlon R,
Gallagher J, Ledwidge M, McDonald K
St. Vincent's University Hospital

64. In an at risk population, increased naturetic peptide is the strongest predictor of incidence of atrial fibrillation - a report from the STOP-HF cohort
Waterhouse D, Tallon E, O' Connell E, Murphy TM, O'Hanlon R,
Ledwidge M, McDonald K, Mahon C
St. Vincent's Hospital

65. AKI in the management of ADHF: comparison of HF-REF vs. HF-PEF
[1]Casey C, [1]Fitzgerald E, [1]Waterhouse DF, [2]O'Connell E, [2]Murray P,
[2]Ledwidge M, [2]O'Hanlon R, [2]McDonald K
[1]St. Vincent's University Hospital
[2]St. Michael's Hospital Dun Laoghaire

66. Comparison of clinical presenting features of patients admitted with right versus left predominant heart failure. A single large tertiary referral centre retrospective study.
Chatur S, Reynolds S, Barnes T, Howlett J, Campbell P.
Foothills Medical Centre/University of Calgary

67. Heart rate awareness in patients with chronic stable heart failure. A multi-center observational study
[1]Moran D, [2]Buckley A, [3]Daly K, [4]Meaney B,
[5]Curtin R, [6,7]O'Neill J, [8]Colwell N
[1]AMNCH
[2] Wexford General Hospital
[3]Galway University Hospital

[4]Mid-Western Regional Hospital
[5]Cork University Hospital
[6]Connolly Hospital Blanchardstown
[7]Mater University Hospital
[8]South Tipperary General Hospital

68. Validation of the MICE clinical prediction rule in a new diagnostic clinic for community based patients
[1]O' Connell [2]E, James S, [2]Murphy T,
[3]Waterhouse D, [3]O'Hanlon R, [3]Ledwidge M,
[3]Mc Donald K, [3]Gallagher J
[1]Heartbeat Trust
[2]St. Michaels Hospital
[3]St. Vincent's Hospital

69. The impact of a heart failure service provided in PHB on patient's health related quality of life (HRQOL)
[1]Makki H, [2]Nolan C, [2]Barton J
[1]Galway University Hospital
[2]Portiuncula Hospital

70. Patients with heart failure in the last 12 months of life - a primary care perspective
[1]McGettigan A, [2]O'Hanlon R, [2]Ledwidge M, [2]McDonald K,
[2]Gallagher J
[1]RCPI
[2]St. Vincent's Hospital

71. Evaluation of Ivabradine eligibility and prescription in chronic heart failure
[1]Cole B, [1]Brennan P, [1]Douglas H, [1]Davidson J, [1]Lindsay P, 2Noad R,
[1]Dixon L.
[1]Cardiology Department, Royal Victoria Hospital
[2]Cardiology Department, Belfast City Hospital

72. Applying the ideal cardiovascular health metrics to couples: a cross-sectional study in primary care.
O' Flynn AM, McHugh S, Madden J, Harrington J, Perry I,
Kearney P
University College Cork

73. The relationship between thyroid dysfunction and advanced lipoprotein cholesterol subfractions: The very large database of lipids- thyroid substudy
McEvoy J
John Hopkins University

74. Associations and outcomes of cardiovascular implantable electronic device infections in a tertiary referral centre
Tweedie J, McGeehan P, Wilson C
Belfast Trust Primary PCI Team

75. Can you die from obstructive sleep apnoea syndrome (OSAS)?
[1]O. Carroll G, [2]Doody E, [1]Vaughan C, [2]Doherty L
[1]Mercy University Hospital
[2]Bon Secours Hospital

76. Hypertension Prevalence, Awareness, Treatment and Control. Should 24 hour Ambulatory Blood Pressure be the Tool of Choice?
[1]O'Flynn AM, [2]Curtin R, [1]Perry I, [1]Kearney P
[1]University College Cork
[2]Cork University Hospital

77. Cardiac Syndrome X in Ireland : Incidence and Phenotype
[1]Dollard J, [2]Dinan T, [1]Kearney P
[1]Cork University Hospital
[2]University College Cork

Session 8: **Surgery / General Cardiology**
Chair: Dr. Martin Quinn

11.30- 12.00: **Cardiac Surgery: Thinking outside the CABG patch**
Johnathan McGuinness,
Mater Misericordiae University Hospital,
Dublin

12.00 – 1.00: **Oral Presentations**

78. Infective endocarditis: an eight year retrospective cohort analysis in an Irish tertiary referral centre.
O' Connor C, Murphy RT, Crean P, Daly C, Foley B, Maree A,
Tolan M, Young V
St. James's Hospital

79. Euroaspire IV (European action on secondary prevention through intervention to reduce events): a comparison of Irish and European results
Neoh S, Fallon N, Storey S, Moran D, Broderick G, Moore D.
AMNCH

80. A Randomised Controlled Trial to Reduce Pre-Hospital Delay Time in Patients with Acute Coronary Syndrome.
[1]McKee G, [1]Mooney M, [1]O' Brien F, [1]O' Donnell S,
[2]Moser D
[1]School of Nursing and Midwifery, Trinity College Dublin.
[2]University of Kentucky, Lexington, United States of America

81. A multi-site prospective observational study on the feasibility of opportunistic screening for atrial fibrillation in General Practice in Ireland
Smyth B, Marsden P, Brennan C, McSharry K, Walsh R, Corcoran R, Clarke J, Harbison J.
Department of Public Health, HSE West, Merlin Park, Galway

82. Cardiac Risk Factors and 6-Year Change in high-sensitivity Cardiac Troponin-T: The Atherosclerosis Risk in Communities Study
[1,2] McEvoy JW, [2]Lazo M, [2]Chen Y, [2]Shen L, [3]Nambi, [4]Hoogeveen

RC, [4]Ballantyne CM, [1]Blumenthal, [2]Coresh J, [2]Selvin E
[1]Ciccarone Center for the Prevention of Heart Disease, Johns Hopkins University School of Medicine, Baltimore, MD;
[2]Department of Epidemiology and the Welch Center for Prevention, Epidemiology and Clinical Research, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD
[3]Michael E DeBakey Veterans Affairs Hospital, Houston, TX;
[4]Department of Medicine, Section of Cardiovascular Research, Baylor College of Medicine and Houston Methodist DeBakey Heart and Vascular Center, Houston TX

83. Impact of genetic variation in the 5-HT transporter and receptor on platelet function in patients with stable CAD taking aspirin
[1]Ryan N, Bajrangee A, [2]Vangjeli C, [3]Brennan M, [1]Crean P, [1]Kenny RA, [3]Cox D, [2]Shields D, [2]Fitzgerald D, [1]Maree A
[1]St James Hospital
[2]UCD
[3]RCSI

13.00 **Close of Meeting**

Abstracts

Session 3: Electrophysiology

1. Arrhythmias detected by implantable loop recorders; a retrospective review of 101 patients
Beirne AM, McKeag N, Dooley M, Ashfield K,
Roberts MJ
Royal Victoria Hospital

Background: Implantable loop recorders (ILR) are currently indicated in the early steps of investigating unexplained syncope. The objective of this study was to investigate the number of arrhythmias detected in patients with an ILR.
Methods: A retrospective review of patients who had an ILR inserted between December 2011 and February 2014 was performed. 101 patients had continued follow up within our centre and information on these patients was obtained from our cardiac implantable electronic device database.
Results: Of the 101 patients analysed, 49 (48.5%) were male. The median age of patient at the time of device insertion was 53 years. The average length of follow up was 15 months at the time of data analysis. The primary indication for an ILR was unexplained syncope/ presyncope in 83 patients (82%) and palpitations/tachycardia in 13 patients (13%). The remaining 5% were for other reasons or not specified. In 61 (60%) patients at least one arrhythmia was detected. Of these patients, 24 (39%) had a tachyarrhythmia identified and 19 patients (31%) a bradyarrhythmia. A further 12 patients (20%) had a combination of both tachyarrhythmia and bradyarrhythmia. The remaining 6 patients (10%) had other abnormalities detected including rate controlled atrial fibrillation and premature ventricular/ atrial complexes. Confirmation of arrhythmia coinciding with symptoms on at least one occasion was observed in 41 (67%) of these patients. In the 83 patients whose primary indication for ILR insertion was syncope, 33 (40%) had no arrhythmia detected.
Conclusions: Arrhythmias were detected in 60% of patients with an ILR over an average period of 15months. Of these patients, 67% had an arrhythmia coinciding with symptoms.

2. Catheter ablation versus medical therapy for patients with symptomatic atrial fibrillation: systematic review and meta-analysis of randomized controlled trials
[1]Tuohy S, [2]Moran D, [1]O'Donnell M, [2]Galvin J
[1]Clinical Research Facility NUI Galway
[2]Mater Misericordiae Hospital

Background: Circumferential pulmonary vein ablation (CPVA) has become a common therapy for atrial fibrillation (AF). Anti-arrhythmic drug therapy (AAT) is widely used in the treatment of AF, but it has demonstrated limited efficacy in controlled trials and this approach has the potential for significant toxic effects. CPVA is a new but widely adopted technique for the treatment of AF that provides an alternate approach for maintaining sinus rhythm.
Objectives: To assess whether CPVA is superior to AAT for the management of symptomatic paroxysmal and persistent AF.

Methods: A search was performed for relevant randomized controlled trials in the following databases; PubMed, EMBASE, and the Cochrane Central Register of Controlled Trials. Recurrence of any atrial tachyarrhythmia (AT) was examined as the primary outcome. Randomised controlled trials comparing catheter ablation of symptomatic AF vs. AAT were included. Trials with chronic AF or asymptomatic AF were excluded. Trials assessing the ablation of atrial flutter were excluded. Trials comparing different ablation strategies were excluded. Data were abstracted by both reviewers (S.T and D.M) independently to construct a 2X2 table for each trial. Data were analysed using commercially available software (RevMan5).

Results: 10 studies qualified for the meta-analysis. In the intervention arm, 591/819 (72.2%) had AT recurrence free survival during the 12-month follow- up period. In the control arm 208/700 (29.7%) had AT recurrence free survival (RR 3.72, 95% CI 1.77,-5.78). Heterogeneity between studies was significant (P<0.00001, Chi2 test=175; I2=95%). Subgroup analysis revealed that the heterogeneity was largely explained by whether CPVA was used as first line therapy. The random effects pooled estimate for the risk ratio for AT recurrence free survival in the subgroup using catheter ablation as second line therapy was 4.17 (95% CI, 3.04-5.71) (P<0.001). (P<0.05, Chi2 test=12.35; I2=51%).

Conclusions: We observed a statistically significant improvement in AT recurrence free survival with CPVA than with AAT. Catheter ablation is likely to be more effective in those who have already failed at least one medical therapy. The above results show that when catheter ablation is used as second line therapy, patients are over 4 times more likely to be AT free at 1 year than if using AAT therapy alone.

3. Prevalence of ion channel mutations and diagnostic yield of genetic testing in an Irish national sudden cardiac death family screening programme

Tuohy S, Moran D, Buckley U, McGorrian C, Galvin J
Mater Misericordiae Hospital

Introduction: Family members of sudden arrhythmic death syndrome (SADS) victims are at increased risk of sudden death. Many cases of SADS are due to cardiac ion channel disorders such as Long QT syndrome (LQTS), Brugada Syndrome, and catecholaminergic polymorphic ventricular tachycardia (CPVT). Screening of first degree relatives of SADS victims yields a clinical diagnosis in approximately 30% of families. However the role of genetic testing in this area is continuing to evolve. The positive yield of genetic testing has been demonstrated to be as high as 72% in LQTS but as low as 21% in Brugada syndrome in previously published large studies.

Methods: This observational study examined the genetic testing results from a national screening programme for first degree relatives of SADS victims. Genetic tests were obtained from selected patients with convincing phenotypes for a cardiac channelopathy. Variants of unknown significance (VUS) considered as a positive genetic test for the purpose of this study. The diagnostic yield was defined as the number of positive genetic tests divided by the total number of tests sent expressed as a percentage.

Results: 118 patients had genetic testing performed in the Mater Heart House over the study period. The most common indication for genetic testing was LQTS (81%) followed by CPVT (10%) and Brugada (3%). A relevant genetic abnormality was identified in 46 patients (39%). The diagnostic yield for genetic testing by clinical phenotype was 41.2% for LQTS, 41.6% for CPVT and 25% for Brugada syndrome. The genes most commonly affected for LQTS were KCNH2 (42.5%), KCNQ1 (37.5%), SCN5A (17.5%) and KCNE1 (2.5%). The most commonly affected gene for CPVT was RYR2 (100%). The only detected mutation in Brugada syndrome was an SCN5A mutation.

Conclusion: The spectrum of mutations seen in this population is largely similar to previously published studies, with a slight over-representation of SCN5A mutations in LQTS. However the diagnostic yield for LQTS is lower than has been demonstrated in other large studies. Possible reasons for low diagnostic yield include a high prevalence of currently unknown mutations in the Irish population. The advent of new genetic sequencing techniques may increase the diagnostic yield. Further research should be directed to investigating gene negative LQTS patients for novel mutations.

4. Use of novel oral anticoagulants results in shorter waiting times for elective dc cardioversion

Collison D, Walsh R, Beecher S, Smyth Y, Crowley J
Department of Cardiology, University Hospital Galway, Galway, Ireland

Introduction: Current ESC guidelines on the management of atrial fibrillation and flutter of >48 hours duration recommend oral anticoagulation (OAC) for at least 3 weeks prior to, and 4 weeks after, direct current cardioversion (DCCV). With warfarin, an INR of 2 - 3 is recommended and elective DCCV is generally deferred until patients have maintained INRs in the therapeutic range for this timeframe. This can result in protracted waiting times for DCCV admissions and, more relevantly for patients, longer periods of time spent in atrial fibrillation.

Aim: To establish if changing trends in novel oral anticoagulant (NOAC) prescription reduce waiting times for elective DCCV.

Methods: A retrospective review of an electronic database of elective DCCV admissions to the Coronary Care Unit in University Hospital Galway was performed. Data recorded included, sex, age, booking date, procedure date, OAC prescribed and whether DCCV was successful or not.

Results: There were 533 DCCV admissions from 05/01/2010 to 25/02/2014. 161 (30.2%) represented repeat attendances. 465 admissions (87%) proceeded to DCCV and of these, 410 (88%) were successfully cardioverted to sinus rhythm. Age at admission ranged from 27 - 87 years. Mean age was 63 years. 415 (78%) of patients were male. On average, female patients attending for DCCV were older than their male counterparts (Mean of 66 years vs. 62 years, p<0.001). Warfarin was the prescribed OAC in 438 admissions (82%). Waiting time for admissions on warfarin was significantly longer than those on NOACs (Mean of 60 days vs. 40 days, p=0.001). Of the 95 admissions on NOAC, dabigatran was the most commonly

prescribed (48), followed by rivaroxaban (42) and apixaban (5).
There was no significant difference in the age of patients on warfarin compared to NOAC (Mean 62.55 years vs. 62.54 years) and the trend towards older mean age in female patients was consistent in both groups. The proportion of female patients on warfarin (23%) was higher than in those on NOACs (18%) however this was not statistically significant (p=0.272).
Mean waiting time to admission reduced annually from 2011 to 2014 (66 days to 35 days). Percentage of admissions on NOAC has increased annually from 2012 to 2014. (3% to 69%). An admission in the first two months of 2014 was more likely to be prescribed a NOAC than warfarin when compared to the same period in 2013 ($p<0.001$).
Conclusion: Mean waiting time for elective DCCV admission was significantly shorter for patients on NOACs than on warfarin (40 days vs. 60 days). With the increasing trend in prescribing NOACs, there has been a corresponding reduction in average waiting times. This likely leads to improved patient outcomes however further study is required.

5. Close relationship of the left atrium to the lungs - a potential hazard during left atrial radiofrequency ablation

Walsh K, Tuite D, Fahy G
Cork University Hospital

Background: The anatomic relationship between the left atrium (LA) and lungs has not been characterised. Tissue necrosis occurs within 5 mm of radiofrequency ablation (RFA). We determined proximity of LA to lungs with particular reference to areas commonly targeted during RFA of atrial fibrillation.
Methods: CT coronary angiograms obtained with General Electric Discovery CT 750 HD with slice thickness of 0.625mm performed in 100 consecutive patients with chest pain were reviewed. Distances from LA endocardium to lungs were measured using OsiriX open-source DICOM viewer.
Results: In 100 patients (55 M, 45 F, age 51 ± 10 yrs) the endocardium of the posterior right pulmonary vein antrum (RPVA) was < 5 mm from the lower lobe of the right lung (RLL) in 95 % (Figure). In this group the RPVA was < 5 mm from the RLL over a superoinferior distance of 3.67 ± 0.81 cm with a minimum distance from LA endocardium to RLL of 2.1 ± 0.62 mm. The right inferior pulmonary vein (RIPV) ostium was < 5 mm from RLL in 94 % (mean distance 2.3 ± 0.82 mm). The right superior pulmonary vein ostium was < 5 mm from RLL in 46 % (mean distance 3.7 ± 0.82 mm). The medial segment of the right middle lobe (RML) was < 5 mm from the carina between the right pulmonary veins in 88 % (mean distance 3.2 ± 0.96 mm). The mitral isthmus was < 5 mm from the lingula in 17 % (mean distance 4.1 ± 0.7 mm). The antrum of the left pulmonary veins close to the posterior ostium of the inferior vein was < 5 mm from the inferior lobe of left lung in 9 % (mean distance 2.8 ± 0.96 mm). The trachea and bronchi were > 5 mm from LA in all patients.
Conclusion: The lungs are intimately related to the LA. Whether LA RFA causes pulmonary complications merits further study.

6. Rate of infection of cardiovascular implantable electronic devices over a year follow-up at a single Irish center

Adeel M.Y, Matiullah S, Salim T, Humra M, ElHanan M, Cuddy S, Gumbrielle T
Cardiology Department, Beaumont Hospital, Dublin

Background: Cardiovascular implantable electronic devices (CIEDs) use has been increasing over time, largely due to the ever increasing functionality of the devices, expanding indications for their use and, to a lesser extent, aging population. Device-related infection remains a huge burden, both medically and financially, despite scrupulous and meticulous pre and peri-procedural attention to skin antisepsis and systemic antibiotic prophylaxis for device placement or revision. Studies estimate varying risk of infection nationally and internationally, approximating in the region of 0.8%-2% over 1 to 5 years interval after implantation.
Objectives: To quantify the incidence of device related infection in patients undergoing CIED plantation and revision at Beaumont Hospital over a period of year and to compare same with national and international standards. The implanted devices included permanent pacemakers (PPMs), implantable cardioverter-defibrillators (ICDs) and loop recorders (LRs).
Method: All patients receiving CIED implants from July 2011 till June 2012 were included. These were new as well as upgrade/replacement of devices. Performa was developed and were used for every patient that underwent device implantation in the above set period. Procedure data was obtained from the cardiac intervention laboratory register, as they are noted in the same, on the bases of implant procedure type, date, performing consultants. Individual patient records were then analyzed manually by checking for any subsequent admissions for device related infections to the Beaumont Hospital from the time of implantation till an year post the implantation. This information was obtained using patient charts, national data base record (heartrhythmireland.ie), discharge letters, investigations including microbiology records, cardiac imaging log and other hematological and radiological investigations.
Results: 131 patients received CIED implants in the interval. Age of patients ranged between 19-96 years, with a median age of 73 years and mean age of 70 years and 9 months. There was male preponderance with 80 male (61%) and 51 females (39%). The device implanted included 87 PPM (66%), 29 ICD (22%) and 15 LR (12%). All patients had prophylactic intra venous antibiotics as per hospital guidelines. Follow up time for device related infection was one year from the date of implantation. One case of device related infection was identified, 0.76% for all the devices inserted. The infected device was dual chamber PPM inserted for complete heart block equating to 1.1% for population undergoing PPM insertion. No ICD or LR related infections were noted.
Conclusion: Our audit shows that with respect to infection rate in CIEDs at Beaumont Hospital, we are at the lower end in comparison to national and international standards. Improved antimicrobial prophylaxis and meticulous antiseptic preparation pre procedure are the approaches to reducing morbidity, mortality, and expense associated with infection after CIED implantation and should closely

be followed.

7. Post ICD Implantation – audit of reasons for de-activation of defibrillation therapies

Murphy L, Salim TS, Sheahan R, Gumbrielle T, McAdam BF
Beaumont Hospital Dublin

Background: Implantable Cardioverter Defibrillator (ICD) implantation is now well-established practice for the prevention of lethal arrhythmias in patients with left ventricular dysfunction and heart failure as per ESC guidelines. This audit was undertaken to identify the patient characteristics and reasons why patients had device therapy deactivated.
Methods: We undertook a systematic review of our database in a single centre University Teaching Hospital over a 15-month period from January 2013 until March 2014.
Results: 38 patients had their devices deactivated for defibrillation therapies. Of these 36 were male and 2 were female with an average age of 75.8 years (range: 54 – 92 years). 28 patients had ICD implantation for primary prevention with an average LVEF ≤25% (18 for ischemic 8 for dilated and one for severe valvular cardiomyopathies respectively). 10 patients had a device implanted for secondary prevention; three of whom had a cardiac arrest with the remainder following symptomatic ventricular tachycardia. Only one of these had a preserved EF. 32% of patients had device deactivation due to progression of disease with development of end stage CCF. 64% of patients had their devices turned off due to a non-cardiological diagnosis, the main reasons being oncological diagnoses (33.3%), other vascular disease (23.8%) and significant respiratory sepsis (19%) on terminal admission. Of note, one device was deactivated due to frequent, inappropriate shocks. The average duration of implant to deactivation in this cohort was 4.24 years (Range 2 months to 8 years). Of the cardiology subgroup: 16.6% were treated for < 2 years, 58.3% for 2-5 years and 25% > 5 years. This compared to the non-cardiology group with 31.5% being deactivated at < 2 years, 15.7% at 2-5 years and 52.6% > 5 years. Palliative care was involved in 48.3% of all patients and most (69.4%) of these patients died in hospital with an average length of stay of 32 days. Only 3(8.3%) died in hospice and a significant minority (22.2%) died at home. Two patients are still alive and are at home.
Discussion and Conclusion: The average time that the devices were implanted before deactivation in this cohort was 4.24 years, limiting the cost-effectiveness of this therapy. Three patients had their device in for < 4 months prior to cessation of treatment. The majority of patients in this cohort were older with multiple medical co-morbidities with most dying in hospital and 64% had non-cardiological reasons for defibrillator therapy cessation. Despite improved algorithms for patient selection by guideline criteria for this therapy many patients die from end stage HF without arrhythmia. We are extending our assessment to previous years to assess and confirm these findings, which may allow development of discriminatory algorithms to refine patient selection criteria to maximize the benefit of this expensive therapy.

8. Spectrum of Long QT gene mutations in the republic of Ireland

[1,2]Moran D, [3]Tuohy S, [4]Noonan B, [1]Mahon N, [1,5]O'Neill J, [6]Ward D, [4]McGorrian C, [7]Green A, [1,5]Galvin J

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[7]National Centre for Medical Genetics, Crumlin.

Aims: Using the iGene database of genetic mutations in the National Centre for Medical Genetics (NCMG), we sought to describe the prevalence of positively identified LQTS gene mutations in those patient sent for analysis of the KCNQ1, KCNH2, SCN5A, KCNE1 and KCNE2 genes. We also sought to describe the relative incidence of each positively identified gene mutation to gain an insight into the prevalence of the different LQTS mutations within the Irish population.
Methods: With the introduction of iGene, a genetic database designed exclusively for input of genetic information, in the National Centre for Medical Genetics (NCMG) in Crumlin; a retrospective review of all patient and family files referred for LQTS gene analysis was performed, and the relevant genetic information was entered into the iGene database.The specific gene mutations analyzed for each patient were recorded, as well as the amino acid change coded for by that mutation, as well as the region that the mutation correlated to. The results of whether a positively identified genetic mutation was identified or not was recorded. In those patients who tested positive for an LQTS gene mutation, it was noted whether they were a heterozygote or homozygote for that gene mutation. Data collection was performed over a 14 month period from July 2012 to the end of September 2013.
Results: Of the 656 entries in the Crumbase Molecular database for LQTS analysis, 10 patients had a diagnosis of Brughada Syndrome and were incorrectly entered as LQTS analyses, 67 entries were repetitions and 165 entries were unaccounted for, either because review of the relevant patient file did not reveal any LQTS gene analysis or because the relevant file could not be found. This resulted in 424 entries for LQTS gene analysis in the iGene database over the 14 month period. No correspondence was received relating to patients tested outside of the NCMG analysis pathway. Of the 424 samples analyzed, 180 (42.45%) tested positive for an LQTS gene mutation. 64 patients tested positive for a KCNQ1 gene mutation (35.6%), 63 patients tested positive for a KCNH2 gene mutation (35%), 36 patients tested positive for an SCN5A gene mutation (20%), 17 patients tested positive for a KCNE1 gene mutation (9.4%) and 4 patients tested positive for a KCNE2 gene mutation (2.2%). 17 separate mutations were identified in 64 KCNQ1 gene mutations, 12 separate mutations identified in 63 KCNH2 gene mutations, 8 separate mutations identified in 36 SCN5A gene mutations, 4 separate mutations identified in 17 KCNE1 gene mutations and 1

gene mutation identified in 4 KCNE2 mutations. 14 patients were found to have digenic mutations.
Conclusions: These results suggest an over-representation of SCN5A and KCNE2 mutations when compared to the previously described spectrum of LQTS gene mutations in the five most common LQTS genes in a European and North American cohort. There is a more than 2-fold increase in the percentage of SCN5A mutations in this study cohort, and more than a 3-fold increase in the percentage of KCNE1 mutations.

9. Prospective evaluation of QT prolongation in patients admitted to Beaumont Hospital, Dublin, Ireland

Bajrangee A, Khalifa W, Mustafa G, Mahabir S, McAdam B
Beaumont Hospital

Background: QT interval variability occurs genetically, with ageing and may be induced by medications. Many older hospitalized patients have several co morbidities and are frequently prescribed medicines which may prolong the QT. We evaluated non telemetry patients above 55 admitted under the medical, cardiology and surgical teams via our emergency room, identifying prevalence of QT interval change and examining factors responsible for QT prolongation.
Methods: Consent was obtained for patients admitted February to May 2013. Twelve lead electrocardiogram (ECG) was obtained at admission with a minimum of two further ECGs over a 30 day study period. Analysis included Bazetts and Fridericia methods of calculating QT, primary diagnosis, medication prescription in hospital, electrolyte measurements, thyroid function and left ventricular function if available. Normal QT was taken as ≤ 440ms for males and ≤450ms for females. Major QT prolongation was considered as >500ms and minor as <500ms.
Results: 77 patients were recruited, 48 male, 29 female, mean age of 74 ± 19 years. Average length of stay was 15 days. 62/77 (81%) had a general medical diagnosis, primarily respiratory infections 32/62 (52%) and alcohol misuse14/62 (22%).12/77 (15 %) a cardiac diagnosis i.e. atrial fibrillation 5/12 (42%) and acute coronary syndrome in 7/12(58%). 3/77(4%) a surgical diagnosis, one with pancreatitis and two with fractures. Mean QT was 408ms for females and 428ms for males at recruitment. Average number of medications 4 ± 6 on admission with 2 ± 3 medications prescribed during admission. QT prolongation 510 ± 20 ms occurred in ten patients 9/10 medical and 1/10 surgical.Two at presentation, one with new atrial fibrillation and another with a stroke on Ranolazine and Bisoprolol. 8/72(11%) had significant QT prolongation during admission. 2/8 to Sotolol and Amiodorone, 2/8 to Ciprofloxacin usage, 2/8 to Clarithromycin usage on patients on Simvastatin 40mg and 2/8 due to ischaemia. Minor QT prolongation 477 ± 10 ms occurred in 10 patients related to sepsis, hyperkalemia, medication interactions and undiagnosed ischemia. Patients with QT prolongation were younger (69 ±10 y vs 74 ± 12y), had more new medications prescribed (2.7 ± 1.3 vs 2.0 ±1.0) and were more likely to be on multiple medication at admission (7.0 ± 1.9 vs 4.0 ± 2.0).
Conclusion: In a non-telemetry cohort above 55, significant QT prolongation was noted in 2% at admission and occurred in 10% of inpatients primarily related to medication. There were no immediate arrhymogenic squeal and the offending drug with discontinued. This study highlights need for closer monitoring with serial ECGs and importance of medication rounds.

10. Close relationship of the left main coronary artery to the left atrium - a potential hazard of left atrial radiofrequency ablation

Walsh K, Tuite D, Curtin R, Fahy G
Cork University Hospital

Background: The anterior left atrium (LA) and base of left atrial appendage (LAA) are often targeted during radiofrequency ablation (RFA) of atrial fibrillation. Coronary artery damage can occur within 5 mm of RFA. We determined the proximity of the left main coronary artery (LMCA) to LA and LAA.
Methods: CT coronary angiograms obtained with Discovery CT 750 HD with slice thickness of 0.625 mm, performed in 100 consecutive patients with chest pain were reviewed. Distances from the LMCA to endocardium of LA and LAA were measured using OsiriX open-source DICOM viewer.
Results: In 100 patients (55 M, 45 F, age 51 ± 10 years) the LMCA was < 5 mm from endocardium of anterior LA or base of LAA in 49 % (Group 1) and < 5 mm from the tubular part of LAA in 11 % (Group 2). In 40 % (Group 3) LMCA was > 5 mm from LA/LAA. In 31 of the Group 1 patients, the LMCA was < 5 mm from both LA and LAA base (Figure) and in the other 18 patients the LMCA was < 5 mm from LAA base only. Of the Group 1 patients: mean length of LMCA within 5 mm of LA and base of LAA was 9.4 ± 4.3 mm (range 1 - 20 mm); minimum distance between LMCA and LA was 3 ± 1 mm (range 1 - 5 mm); distance between LMCA ostium and LA/LAA was 4.9 ± 1.8 mm (range 1 - 9 mm); mean myocardial thickness at LA/LAA sites closest to the LMCA was 2.6 ± 0.6 mm (range 1 - 4 mm); the part of LMCA closest to LA/LAA was most commonly the distal third of LMCA (n=22); the LAA was inverted in transverse sinus (TS) in 1. In 5 Group 2 patients LAA was inverted in TS.
Conclusions: LMCA is close to the anterior LA and base of LAA in most patients. Myocardial tissue is thin in these areas. RFA should be limited at these sites to avoid potentially catastrophic LMCA injury.

11. Sudden cardiac death a 5 year analysis in the cardiac risk in younger persons (CRYP) centre

Ward D, Connaughton H, Reynolds A, Mulcahy D
Tallaght Hospital

Background: Sudden Cardiac Death is usually due to sudden arrhythmia unless aortic dissection or cardiac rupture is identified. Sudden Arrhythmic Death Syndrome (SADS) is where sudden death has occurred in the presence of a structurally normal heart, and is essentially a diagnosis of exclusion. Annual incidence of SCD in general population is estimated as 1 in 1000. Over 5,000 people suffer sudden cardiac death in Ireland each year, of which 60 to 80 of these are under the age of 35 years .When SCD occurs in people over 35 years of age, the most common cause is coronary artery

disease. Increased awareness of SADS has lead to the documentation of SADS as the cause of death in over 25% of cases of SCD under 35 yrs. The CRYP centre opened in November 2008 and assesses individuals and families affected by SCD in a close relative or with a family history of inherited cardiac disease.

Purpose: The aim of this study was to characterise patients referred to a specialist centre over a 5 year period for cardiac evaluation due to a family history of definite or probable SADS, or aborted sudden death in the absence of a structural abnormality, and to report the outcome of assessment in this potentially high risk population.

Method: A retrospective analysis was performed of the clinical records of all patients assessed at the centre over a five year period. Families and individuals referred for specialist evaluation underwent pedigree compilation, clinical history, physical examination and non-invasive cardiac investigations, including Electrocardiogram (ECG), Echocardiogram (ECHO), Exercise Stress Testing (EST) and 24-48 hour Holter monitoring at their first visit.

Further investigations such as Ajmaline provocation, cardiac magnetic resonance imaging, genetic testing and electrophysiological studies were carried out where appropriate. Post mortem results were requested from the respective coroners.

Results: A total of 1309 patients, from 317 families. were referred to the CRYP centre over a 5 year period due to family history of sudden cardiac death with SADS as the diagnosis, or aborted cardiac arrest. An inherited electrical condition such as Long QT (LQT) syndrome, Catecholaminergic Polymorphic Ventricular Tachycardia (CPVT) or Brugada syndrome was found in approximately 35% of these individuals.

Conclusion: Sudden Cardiac Death has devastating effects on families. Systematic cardiac evaluation of relatives in a specialised family screening centre enables a definitive diagnosis of inherited cardiac disease to be made in a timely manner. This enables early intervention in individuals deemed to be at risk of sudden cardiac death. The yield of 35% is comparable to internationally reported rates which can vary from 22-56%.

12. Five years of genetic testing in the cardiac risk in younger persons centre a retrospective analysis

[1]Connaughton H, [1]Moran D, [2]Green A, [1]Mulcahy D, [1]Ward D.
[1]Tallaght Hospital
[2]Crumlin Hospital

Background: The Centre for Cardiac Risk in Younger Persons (CRYP) opened in November 2008. The centre provides cardiac evaluation of close relatives of victims of sudden death of definite or probable cardiac cause, people with symptoms suggestive of inherited cardiac conditions and also families with confirmed inherited cardiac diseases. Where appropriate those diagnosed with inherited cardiac conditions are referred to the National Centre for Medical Genetics (NCMG) for counselling and genetic testing (both probands for exploratory testing, and family members for predictive testing).

Purpose: The aim of this study was to assess the proportion of patients referred for genetic testing in whom clinically useful results are obtained.

Method: A retrospective analysis was performed on the clinical records of all patients assessed at the centre. Patients were referred for genetics as appropriate based on family history and the results of non-invasive cardiac investigations.

Results: A total of 349 patients were referred for genetic tests from November 2008 to November 2013. This was for a total of 379 genetic tests. The different genetic tests requested included Long QT Syndrome (LQTS), Hypertrophic Cardiomyopathy (HCM), Arrhythmogenic Right Ventricular Cardiomyopathy (ARVC), Dilated cardiomyopathy (DCM) and Catacholaminergic Polymorphic Ventricular Tachycardia (CPVT). 190 tests were requested for LQT syndrome and 79 of these were index cases. Of the index cases, 26% of them had a genetic variation found. Yield for HCM index cases was 68% (13/19), DCM was 55% (6/11), ARVC was 100% (4 patients) and CPVT was 33% (2 of 6).

Conclusion: Genetic testing is a very important tool in evaluating inherited cardiac conditions. Specialist clinical evaluation is still essential to monitor those who are mutation positive and all relatives of index cases where no mutation can as yet be found. Our yield in finding clinically useful mutations in LQTS and CPVT are considerably lower than international reports would suggest. This reflects the inclusion of a number of patients referred because of equivocal ECG pattern and symptoms (probable phenocopies of LQTS), and in some cases the testing of both parents of a SADS victim if the family history was of particular concern. These results more closely reflect the yield of genetic testing in SADS at post-mortem, for which our practice is currently a surrogate. This suggests review and modification of our clinical criteria for genetic referral in channelopathies should be considered and the outcome reassessed as a key performance indicator in the future. The yield for structural heart disease is comparable to, and even superior to internationally quoted results confirming appropriate case selection and referral.

13. Safety and Cost Effectiveness of Day Case Ablation in Ireland

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Background: A paucity of data exists regarding the feasibility and safety of day case radiofrequency ablation. There is an absence of a formal recommendation in the AHA guidelines. Day case ablation for a variety of arrhythmias is now routinely practiced in our hospital, a Tertiary Care University Referral Centre. A retrospective review of consecutive patients who underwent day case ablations was performed to determine the safety and cost effectiveness of this approach.

Methods: A total of 135 consecutive patients attending for electrophysiological studies and ablation were analysed. Patients undergoing a PVI or ischaemic VT study were excluded from analysis. Day cases were observed for 4 hours post procedure prior to discharge. Average age, procedure type, duration of procedure, anticoagulation status, residential distance from hospital, travel time to hospital, readmission within 30 days and projected savings per day case were recorded.

Results: Of 135 patients, 88 (66%) were day cases. Negative EP

studies (7%) were discharged on the same day. 58 (65%) were male with mean age of 45 ± 30 years for the total cohort. Radiofrequency ablation accounted for 88% of total day cases (77/88) which consisted of AVNRT 50% (43/88), AVRT 21% (18/88), Atrial Tachycardia 7% (6/88), Atrial Flutter 6% (5/88) and AV node ablation 9% (5/88). Transeptal puncture was performed in 14% (9/88) of day cases. 15% (12/77) of patients were on oral anticoagulation, the mean INR for Warfarinized patients was 2.3. The average procedure time was 145 minutes with 97% of patients receiving conscious sedation. Average distance to hospital was 21 ± 105 miles with the average travel time to hospital being 51 ± 105 minutes. Cost savings for day case discharges per patient per night was 1000 Euros, totalling 88000 euros. Three patients re-presented within 30 days. A case of palpitations, non cardiac chest pain and a groin haematoma not requiring intervention were seen in ER. They were all investigated and discharged directly from the ER.

Conclusion: In our consecutive series, day case ablation was both safe and cost effective for a variety of ablation procedures. Day case ablation should be considered as the standard of care for inclusion in the next guideline revision.

14. Cardiac Catheterisation Laboratory Activation for Primary PCI: cases not leading to intervention. A mixed group in need of a standardised classification

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Purpose: It is recommended that primary PCI be delivered by a multidisciplinary team that is available at all times. This costly resource may be called upon for cases that prove not to require primary PCI, either because of initial ECG misdiagnosis, a false positive ECG, or because the case is not suitable for an interventional approach. Call-outs for such cases are not infrequent and are an important drain on resources. In this study we quantify the rate of cathlab activations not leading to PPCI, identify the underlying reasons and propose a classification of such cases designed to positively address the problem.

Methods: We analysed the database of a register of all acute coronary syndrome cases presenting to a primary PCI centre in the southern region of Ireland from October 2012 to June 2014. We identified all cases leading to cardiac catheterisation laboratory activation for primary PCI that did not subsequently undergo intervention.

Results: In the 20 month period, a total of 450 cases were referred to the catheterisation laboratory for PPCI, of which 75 (75/450, 17%) patients did not proceed to intervention. Twenty-six of these were referred from the emergency department (ED), 25 by paramedics and 24 from other hospitals. In 33 cases, the ECG had ST segment elevation consistent with STEMI (33/75, 44%). The most common diagnosis in this group was non-cardiac chest pain (7/33, 21%), followed by mild non obstructive CAD (5/33, 15%) and chronic 3 vessel coronary artery disease (5/33, 15%). The ECG was misinterpreted as STEMI in 35 cases (35/75, 47%). Eighteen (18/35, 51%) of these cases were referred by paramedics. Pericarditis was the most common diagnosis in this group (11/35, 31%). Six of these ECG's showed normal sinus rhythm with no ST segment deviation (6/35, 17%). Five cases were deemed clinically unsuitable for PPCI due to significant co-morbid conditions or a clear alternative diagnosis. In these cases, no ST segment elevation was seen on the ECG.

Conclusion: We identified three distinct groups leading to cathlab activation that did not undergo PCI: (A) the first, a majority, comprised cases that were misdiagnosed by the referring source (paramedic or doctor) as a result of a misread ECG, (B) a smaller group were true false positive cases that required coronary angiography to determine the diagnosis and (C) a very small number were judged unsuitable for intervention. The first require angiography for a diagnosis and are not inappropriate. The second may be prevented by electronic ECG transmission when available. The last require clinical consideration, and either discussion with an experienced referring physician or evaluation in the Emergency Department may prevent unnecessary cathlab activation.

15. False activation of the cardiac catheterization laboratory for primary percutaneous coronary intervention

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Introduction: Primary percutaneous coronary intervention (PPCI) for the treatment of ST-segment Elevation Myocardial Infarction (STEMI) has been shown to significantly reduce morbidity and mortality. A key aspect to this is rapid activation of the cardiac catheterisation laboratory (CCL). This rapid activation and the pressure to reduce reperfusion time can lead to an increase in the rate of false positives. This study aims to quantify the number of false positives and the rate of appropriate versus inappropriate activations.

Methods: We analysed data from patients with emergency STEMI activations of the CCL at the University Hospital Limerick (UHL) from November 2012 to October 2013. False positive STEMI was defined as the absence of a clear culprit lesion on coronary angiography. Inappropriate activations were defined as emergency ECG readouts, which did not warrant an emergency activation of the CCL after expert analysis.

Results: Out of 202 emergency CCL activations indicated for STEMI, 31% (63) were false positive activations. The mean age of the false positive group was 64 and 70% were males. Of all the false positive emergency STEMI activations, 62% (39/63) were out of hospital hours and 38% (24/63) were within hospital hours. 65% (41/63) of the false positives had no culprit lesions on angiography and 35% (22/63) did not receive coronary angiography after assessment by a cardiologist. 35% (22/63) of the false positives were deemed inappropriate activations with no abnormality on ECG being the most common finding (59%) followed by right bundle branch block (18%), left ventricular hypertrophy (9%) and atrial flutter (9%). 65% (41/63) were deemed appropriate with left bundle branch block (41%) being the most common finding, true actual ST segment elevation (32%) and high take off (27%). The final diagnosis and clinical diagnosis of the false positive group were also analysed. The most common diagnosis was stable angina (21%), non cardiac chest

pain (16%) and arrhythmias (14%). Others included pericarditis, nSTEMI and metabolic disease. Clinical outcomes showed that 76% were discharged from hospital, 16% were referred to other disciplines and 8% were readmitted within a week after discharge.
Conclusion: A third of emergency CCL activations were false positive STEMI activations and a third of these false activations were inappropriate and therefore should not have occurred. False positive activations were more likely to occur out of hours than in hours. This study shows that improving STEMI diagnosis and its mimics by the hospital emergency team/paramedics could lower the number of false activations thus reducing the cost of inappropriate activation of the catheterisation laboratory.

16. The use of cardiac troponin in the emergency department - millions wasted?

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Introduction: Cardiac troponin is increasingly used in emergency departments to both diagnose and exclude acute coronary syndrome (ACS). In our study, we analysed the use of troponin in the Emergency Department (ED) in a general hospital to assess its appropriateness as a diagnostic tool and assess cost.
Methods: A total of 365 consecutive patients were prospectively followed between 20/1/13 and 4/2/13 in an ED with a dedicated Chest Pain Unit (CPU). Cardiac troponin I (TnI) was studied with a positive result indicated by: lab value >0.05ng/ml or rise >50% after 6-12 hours; point-of-care (POC) machine value >0.1ng/ml. Presenting complaint, TnI time, TnI result, diagnosis, admitting team and management plan were recorded for all patients. Costs were calculated for testing lab and POC machine TnI.
Results: In the study period, 218 medical admissions had 184 lab TnI tests. Of these, 61% (131/218) had a first TnI, 18% (23/131) had a second TnI within 6-12 hours of the first, 21% (28/131) had a second TnI outside of this timeframe and 2% (2/131) had a third TnI. Chest pain or dyspnoea was the presenting complaint in 48% (63/131) of those with TnI tested. TnI was positive in 21% (27/131). ACS (ST elevation myocardial infarction (STEMI) or non-ST elevation myocardial infarction (NSTEMI)) was diagnosed in 14% (18/131). Cardiology admissions accounted for 28% (36/131) of medical patients who had TnI tested, including all those diagnosed with ACS. For surgical admissions (N=95), 12 patients (13%) had 18 lab TnIs tested. For 52 CPU patients, 62 POC TnIs were tested. For CPU patients with repeat TnI, 80% (8/10) of these were within 6-12 hours of the first. One laboratory TnI cost €161.87. The mean cost per day of lab TnIs from ED was €1,904 for medical patients and €224 for surgical patients. This gave projected mean annual lab TnI costs of €694,960 and €81,760 respectively. One TnI on the POC machine cost €24 with a mean cost per day of €85.50, or €31,207.50 per year. Assuming TnI testing was an unnecessary expenditure in any medical patient without cardiac symptoms, with mistimed second TnI, with third TnI or any patient admitted surgically, the annual cost of inappropriately tested TnI was €440,270 in ED and €1,200 in CPU. Assuming similar trends for all general hospitals in Ireland, this amounted to €9,245,670 and €25,200 respectively.
Conclusion: In EDs without a standardized protocol for troponin use, a large expense may be unnecessarily incurred. This may be due to troponin having become a routine initial investigation for ED patients, regardless of mode of presentation. Introducing criteria in EDs for use of troponin could streamline its inappropriate use and reduce costs. CPUs may be useful in reducing cost of troponin where cardiac pathology is suspected in stable ED referrals.

17. Trends in percutaneous coronary intervention and angiography in Ireland, 2004-2011: implications for Ireland and Europe

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Objective: To describe temporal trends in cardiac catheterisation and percutaneous coronary intervention (PCI) and developments in cardiac catheterisation laboratory facilities in Ireland from 2004 - 2011.
Design, setting and patients: Two data sources were used: a) a survey of all publicly and privately funded hospitals with cardiac catheter laboratories to obtain the total annual number of procedures performed and b) anonymised data from the Hospital In-Patient Enquiry (HIPE) for angiography and PCI in acute hospitals; age standardised rates were calculated to study trends over time.
Main outcome measures: Crude and age standardised rates for cardiac catheterisation and PCI, angiography to PCI ratio.
Results: From 2004 to 2011 the crude rate of angiography and PCI increased by 47.8% and 35.9% respectively, with rates of 6,689 and 1,825 per million population in 2011. Following age standardisation, however, PCI activity showed a non-significant decrease over time, more notable in those aged ≥65 years. The PCI to angiography ratio decreased from 30% to 27%, with a significant reduction in the private sector (p=0.024). In 2011 PCI was performed predominantly for stable coronary heart disease (54%). The number of hospitals with catheterisation laboratories increased from 12 in 2004 to 16 in 2011; half of these undertook high volumes (≥400) of PCI per year in 2011.
Conclusion: While crude angiography rates are increasing in Ireland, age adjusted PCI rates showed a non-significant decrease over time. A higher proportion of PCI is performed for stable CHD in Ireland in recent years compared with the USA and the UK.

18. Audit of treatment duration of dual anti-platelet therapy in patients post ACS and Elective PCI. A single centre experience in Beaumont Hospital

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Dual Antiplatelet therapy (DAPT) is standard of care following an Acute Coronary Syndrome (ACS) and Percutaneous Coronary Intervention (PCI). Current guidelines recommend 12 months DAPT for an ACS and 6 months for elective PCI. DAPT beyond one year has been shown to be associated with a greater risk for bleeding complications. The purpose of this audit was to identify patients on DAPT beyond the recommended duration and to discover the reasons for their prolonged DAPT treatment. This was conducted in Outpatient Department (OPD) from September 2013 until April 2014. The total numbers of patients that were reviewed for the audit were 4,400 in our centre where we perform 600 PCIs per year, 10% of which are CTOs. We identified 51 patients on DAPT beyond the recommendations from international guidelines. The mean age was 67, M: F was 40:11, 9 (18%) were diabetic, 9 (18%) had Atrial Fibrillation, 24 (47%) were smokers, 1 patient had ESRD and 10 (20%) patients had prior CABG. 47 patients underwent PCI, 16 patients had multivessel PCI, 5 had PCI to the Left Main Stem, 3 were CTO-PCI. All of the patients had DES implanted, average number of stents was 2, covering on average 54mm, 12% had first generation DES. The indications for DAPT included ACS (n=41) and elective PCI (10). 1 patient had PCI and LAA closure. The median duration of therapy beyond guidelines was 9 months, ranging from 1 to 84 months. All of the patients were on Aspirin. Despite the advent of newer and more efficacious inhibitors of ADP dependent platelet aggregation, in this cohort 31(60%) patients were on Clopidogrel, 16(30%) on Prasugrel, and only 3(6%) on Ticagrelor. Three patients were on Aspirin, Clopidogrel and Warfarin. No patients were identified on prolonged DAPT with NOACs. No patients in this cohort experienced any major bleeding complications. From a treatment direction perspective the recommended DAPT duration was documented on 28 (55%) of the Catheterisation reports which may not have been sent to the GPs but only on 8 discharge letters. Interestingly 17 of the patients had been reviewed in the cardiology OPD at date beyond which their second antiplatelet agent should have been stopped; two thirds were reviewed by Registrars. Our audit demonstrates significant number of patients who continue to take a second antiplatelet medication beyond guideline recommendations independent of lesion complexity, graft intervention, left main stenting, number of stents implanted and length of stented segment despite regular Cardiology OPD and GP follow up. A key contributing factor was poor documentation and communication. This audit highlights the need for clearer instructions to come from the cardiology department. The findings emphasise the need to review antiplatelet agents at each OPD review. This is more salient with the wider use of newer antiplatelet medications that are associated with more bleeding complications.

19. 1 year mortality in patients presenting with ST- Elevation Myocardial Infarction- Prediction of outcome using the SYNTAX score

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Introduction: The SYNTAX score is a validated angiographic scoring system that has been shown to aid re-vasularisation decision making, predict mortality and morbidity in patients, based on the characteristics of atherosclerotic lesions and coronary anatomy. However, in the original SYNTAX trial, patients presenting with acute STEMI were excluded. The purpose of this study was to assess the prognostic value of the SYNTAX score in patients presenting with STEMI on one year all cause mortality.
Study Design and Patient Population: Patients presenting to our centre for Primary PCI between 1/1/13 and 30/03/13 were included in our study. Those patients with a false alarm diagnosis and those with prior CABG were excluded. In all included patients, a SYNTAX score was calculated. Index admission ejection fraction (EF) was noted where available. All included patients were then followed up for 1 year all cause mortality.
Results: 51 patients were included in the study- 37 males and 14 females. The average age was 61 years, with a range from 41-89 years. At one year follow up, 5/51 deaths had occurred. The mean SYNTAX score in our study was 17.32. 23.53% of our patients had a SYNTAX >22- 15.69% SYNTAX 22-32, and 9.8% had SYNTAX >32. In the 46 patients alive at one year the mean SYNTAX score was significantly lower at 15.26 than the corresponding 5 patients who were not alive, mean SYNTAX 34.9. When patients were grouped according to the 3 SYNTAX groups, both patients with a SYNTAX >32 were not alive at one year, whereas the majority of patients with SYNTAX <22, and SYNTAX 22-32 were alive, 40/41 and 6/8 respectively. Similarly, Patients with a higher SYNTAX score were more likely to have a reduction in EF; SYNTAX 22-32, EF >50 0/6, EF 30-50 3/6, EF <30 3/6 and SYNTAX >32 EF <30 2/2 patients.
Conclusion: The SYNTAX score, by assessing anatomical and lesion characteristics, is a predictor of one-year mortality in patients with acute STEMI. In particular, higher SYNTAX scores identify patients likely to have worse outcomes, and reduced left ventricular systolic function.

20. Changes in STEMI management in Mid-Western Ireland with the advent of modern PCI facilities

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Background: Primary percutaneous coronary intervention (PPCI) has been the standard of care for ST elevation myocardial infarction (STEMI) for over a decade. Door-to-balloon time of <90 minutes is associated with significantly better clinical outcomes. With the introduction of the HSE National Clinical Programme for Acute Coronary Syndrome (ACS) which recommends that as many STEMI patients as possible should have access to primary PCI, a 24 hour coronary catheterisation lab opened in the University Hospital Limerick (UHL) in October of 2012 to provide all hours access to PPCI revascularisation for the population of the mid-west of Ireland. Prior to October 2012, PPCI at UHL was limited to working hours, while out-of-hours STEMI was managed by thrombolysis and

transport to other centers for a facilitated PCI which significantly increased the time to mechanical revascularisation.

Methods: Here we report simply on changes in management for patients presenting with STEMI to UHL since the advent of the 24 hour catheterization lab service. A period of 6 months prior to opening the UHL catheterization lab (April 2012-October 2012) is compared to the six months following opening (October 2012-April 2013). Data was mined from a catheterization database of sequential STEMI presentations to the University Hospital Limerick (UHL) during the period of January 2011 to April 2013.

Results: The number of STEMI presentations to UHL was larger in the six months following the opening of the 24 hour catheterization lab (64) than in the preceding six months (54). Management of acute STEMI by PPCI accounted for 46.3% (25) of cases prior to opening, and increased to 81.3% (52) of procedures thereafter. With the availability of the 24/7 lab the numbers of facilitated PCI accordingly dropped from 27.8% (15) to 1.6% (1). The use of thrombolysis also fell precipitously from 31.5% of cases prior to the 24 hour lab, to just 3.5% (2) in the period after opening. The average left ventricular ejection fraction and the presence of multi-vessel disease was similar across the two periods.

Conclusions: The National Clinical Programme for ACS-supported opening of the 24 hour catheterisation lab at UHL is successfully delivering PPCI to a large proportion of STEMI presentations for whom primary mechanical revascularisation was not previously available. Patients in mid-western Ireland have received better care for STEMI according to guidelines during the period following the opening of the 24 hour catheterisation lab. With the initial months of this facility concluded, and streamlining of delivery of patients from the community, we expect that these numbers would improve further.

21. Management and outcomes of significant non-culprit coronary lesions in STEMI: A retrospective study

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Background: In the setting of ST-elevation myocardial infarction (STEMI) and multi-vessel disease (MVD), current guidelines recommend revascularisation of the culprit lesion (CL) only, due to poor evidence supporting intervention in non-CLs. Debate over management strategy for significant non-CLs is of interest; medical management vs. percutaneous revascularization. This study aims to describe a cohort of patients with STEMI and MVD in demographic and angiographic characteristics, therapeutic strategies of non-CL, and 1-year outcomes.

Methods: We retrospectively analyzed a cohort of 71 patients with STEMI and MVD from a database of sequential STEMI presentations to the University Hospital Limerick (UHL) in the period from Jan 2011 to April 2013. MVD is defined as ≥70% stenosis of ≥2 coronary arteries. Major adverse cardiac events (MACE) was quantified using a GP questionnaire. Median follow up was 1.8 years. MACE is defined as acute coronary syndrome, new onset heart failure, or death (cardiac related).

Results: The patients were predominantly males (71.8%), had a smoking history (58.3%), and the mean age was 63.6 years. CLs were mostly managed by PCI (70.1%, 54), with the rest receiving coronary artery bypass graft (CABG) (17.0%, 12), or medical therapy only for clinical reasons (7.0%, 5). Predominant management for non-CLs was medical therapy alone comprising 62.0% (44) of patients, while 21.1% (15) of patients underwent PCI for non-CL, and 17.0% (12) had CABG.

When compared to medical therapy, PCI for non-CL has shown no added benefit (HR 2.05, 95% CI 0.76-5.5, p= 0.16), while the CABG treated group had a significantly lower risk of MACE (HR 7.4, 95% CI 0.94-57.9, p=0.058). CABG compared to PCI is also associated with a significantly lower risk of MACE (HR 15.3, 95% CI 1.6-142.4, p= 0.017).

Conclusion: This study emphasizes the debate over management of bystander coronary disease in STEMI patients and concludes that in terms of MACE at follow-up; CABG appears superior to both PCI or medical management, and PCI appears not superior than medical management alone.

22. Prospective analysis of serial high sensitivity Troponin T values and correlation with outcomes incorporating cartesian slope mapping as a risk stratification tool

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Background: The availability of high-sensitivity biomarkers in acute clinical practice has greatly lowered the threshold for diagnosis of non-ST elevation myocardial infarction (NSTEMI). Better understanding of serum biomarker significance may improve delivery of care to patients presenting with potentially cardiac symptoms in the setting of positive serology.

Aims: To investigate correlation between quantitative cardiac biomarker data, quantitative patient data and clinical outcomes in a stable population. Implications would include the development of clinical pathways in which low-risk patients could be discharged on appropriate medical therapy and managed with expedited day-case or outpatient follow-up.

Methods: We recruited patients presenting to the Emergency Department (ED) in University Hospital Limerick (UHL) over a 4 month period with chest pain in whom cardiac biomarkers were elevated and who proceeded to coronary angiography. Patients with high-risk features on ECG were excluded. Troponin T (TnT) profile in each patient was attained by plotting serum TnT elevation against time and calculating the slope of the line by point slope formula. Data on interventional findings at angiography and clinical outcomes such as need for intervention, devices used and length of hospital stay were detailed.

Results: 50 patients were included in a prospective over the study period (October 2013 - January 2014). 17 (34%) of the patient group proceeded to percutaneous coronary intervention (PCI). A further 7 patients (14%) were found to have high-risk disease not suitable for PCI. The remaining 52% did not warrant intervention. The patients

who proceeded to PCI were more likely to be female (52.9% vs 34.6%), had longer median duration of chest pain (1 hour vs 0.5 hours) and steeper troponin profile (1.5 ng/ml/hour vs 0.17 ng/ml/hour). A slope calculated at >1 conferred higher a rate of intervention than patients with a slope of <1 (47.37% vs 25.8%). Raising the slope threshold to >3, >10 and >20 ng/ml/hour improved the positive predictive value (PPV) for intervention to 57.1%, 62.5% and 66%, respectively. There was no correlation noted between amplitude of serum TnT rise and mean left ventricular ejection fraction (LVEF) or presence of regional wall motion abnormalities (RWMA) as measured by transthoracic echocardiography (TTE).

Conclusions: Serum TnT profile as calculated by simple Cartesian slope appears to correlate with severity of CAD. Clinical pathway development for patients with elevated cardiac biomarkers and a flat TnT profile may facilitate early discharge.

Session: Revascularisation

23. Coronary chronic total occlusions: A 2 year experience from a UK chronic total occlusion registry

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Background and Aims: Coronary chronic total occlusions (CTO) represent a challenging subset of lesions treated by percutaneous intervention (PCI) with low success rates historically. The aim of this study is to examine patient and lesion characteristics, strategies employed for CTO PCI with a hybrid approach and outcomes in current practice.

Methods: Patients undergoing PCI to CTO lesions were identified at 2 Belfast sites from returns to the BCIS dataset from January 2012 to January 2014. Patients were selected for CTO PCI on the basis of clinical need. No patients were refused PCI according to anatomical characteristics. Demographic, angiographic, procedural and outcome data were recorded for all cases. Follow up at 30 days has been completed. The Japanese-CTO (J-CTO) score grading lesion complexity was recorded for each procedure.

Results: CTO PCI procedures were performed in 250 patients (male 79%, age 67.9 ±10.1 years) with 272 CTO lesions. Previous myocardial infarction (MI) occurred in 64%, the left ventricular ejection fraction (LVEF) was impaired in 33%, previous PCI was performed in 59% of cases and 29% had prior artery bypass grafting (CABG). Graft failure to the target vessel was found in 24% of cases. CTO distribution was: left main coronary artery 4%, left anterior descending 24%, left circumflex 21% and right coronary 51%. J-CTO (range 0-5) demonstrated a mean of 2.8 (Table 1). Average procedure time was 98 ±38 minutes. Volume of contrast used was 305 ±115mls. Mean Dose Area Product (DAP) per procedure was 13378 ±9224 Gycm2. A single initial planned strategy effected successful outcome in 71% of cases, with strategy breakdown shown in Table 2. Technical and procedural success was 80% and 79% respectively and when repeat attempts were included the success rate reached 90.4%. Major complications were 7/272 (3%): Ellis grade 3 perforation and tamponade n=3, MI n=2, death n=1 (refractory heart failure), stroke n=1. Minor complications included: Ellis grade 1 or 2 perforation n=6, contrast-induced nephropathy without dialysis n=1, bleeding n=1, vascular complication not requiring intervention n=4. Unscheduled target vessel revascularisation within 30 days was required in 1 case due to subacute stent thrombosis.

Conclusion: Experienced operators can achieve successful outcomes in >90% of cases with acceptable complication rates. However, divergent strategies are needed for complex cases.

Figure 2. Strategy breakdown by percentage

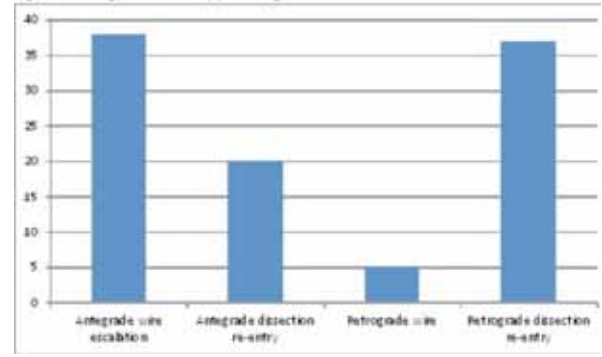
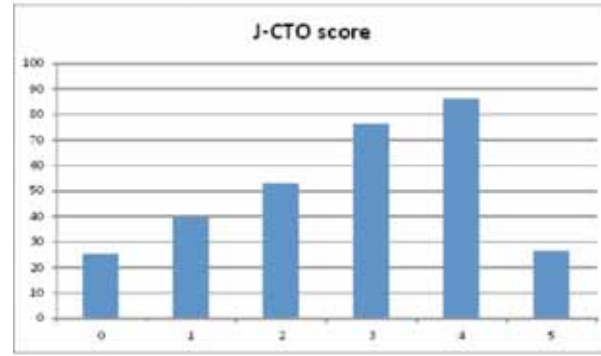


Figure 1. Distribution of complexity scores by percentage



24. Does successful CTO percutaneous revascularization improve anginal symptoms, quality of life and LV systolic function?

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Background: Coronary chronic total occlusion (CTO) is complete or near complete occlusion of a coronary artery of at least 3

months duration. CTOs are identified in 15% to 30% of all patients referred for coronary angiography. Presence of an untreated CTO is prognostically important, however, CTO percutaneous intervention (CTO-PCI) is a complex and technically challenging procedure.

Objectives: To evaluate the benefits of successful CTO-PCI (chronic total occlusion percutaneous intervention) in terms of angina, and left ventricular systolic function pre-intervention (EF Pre) and post-intervention (EF Post) in 62 patients with successful CTO percutaneous recanalization after a period of at least 6 months post intervention.

Methodology and Results: We reviewed patient charts for details which included date of intervention, number and distribution of vessels intervened, and risk factors. Left ventricular systolic function was obtained by reviewing echocardiography reports pre and at least 6 months post CTO-PCI. Among a cohort of 106 subjects 62 patients were suitable for the study. The mean age of patients was 71.4 years ± 9.9. Subjects were interviewed using Seattle angina questionnaire. The majority were males (72.6%). The mean time post intervention was 33.7 ± 18.9 months. Exclusion criteria were the CTO segment being in a coronary bypass graft, subjects with communication difficulties such as dementia or impaired hearing, subjects unreachable by phone and patients for whom we could not access medical records.

Risk factors included hypertension, 51 (82.3%), hypercholesterolaemia 46 (74.2%), diabetes 12.8% .Interestingly 22 of the patients were active smokers 33.9%. Only 3 patients had a background of chronic kidney disease (4.8%).

There was a significant improvement in mean left ventricular ejection fraction pre and post intervention mean EF pre-intervention was (47.56%) ± 6.5 compared to (51.47%) ± 4.1 post intervention (P value <0.05) mean time for echo follow up was 13.7 months ± 3.3,and this was independent of which vessel was vascularized.

The scored questionnaires demonstrated a significant improvement in all the five components which included Exertional Capacity, Angina Stability, Angina Frequency, Treatment Satisfaction and Disease Perception. The means of the scores were compared pre and post intervention and the differences were statistically significant (P value <0.05). There was no gender difference in response between these variables.

Conclusions: This single centre retrospective study demonstrated improvement in angina symptoms, quality of life and left ventricular systolic function following successful CTO-PCI. Accordingly we conclude that CTO-PCI is appropriate and justifiable in patients with viable myocardium.

25. Cardiac Troponin testing in the ED; a study of indications, clinical context and impact on treatment

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Introduction: Elevated cardiac troponin level in blood is a sensitive and specific marker of myocardial necrosis. The causes of troponin elevations vary from acute myocardial infarction to pulmonary embolism to sepsis etc. Elevated cardiac troponin level is not synonymous with an acute coronary syndrome. Moreover elevated cardiac troponin can also occur as a result of cardiac ischeamia which may not necessarily be an acute coronary syndrome; the so called demand troponin rises or Type 2 myocardial infarctions. Thus troponin testing is only recommended if the presence of an acute coronary syndrome is suspected on clinical grounds. The practical need for rapid triage in the emergency department has resulted in an increase in the troponin testing. However the indiscriminate use of troponin (which is sensitive for myocardial necrosis but nonspecific for myocardial infarction) as a screening tool to diagnose or exclude an acute myocardial infarction in the emergency department has a potential to increase the incidence of inappropriate tests, misdiagnosis, misuse of highly potent antiplatelet and antithrombotic therapy, and may also lead to overutilization of invasive cardiac investigations.

Aims and objectives: We performed a study to find the indications for which troponin testing is performed in the emergency department in a large tertiary care hospital. The purpose was to determine if troponin testing in the emergency department is performed in the clinical context of an acute coronary syndrome.

Methods: All patients who presented to the ED who underwent troponin testing were included in the study. The patients were triaged by the ED staff in the routine manner. The patients symptoms and clinical context and ECG findings were recorded by an experienced chest pain nurse specialist and an ED registrar in a proforma. This information was collected for a period of 4 weeks. At the end of the 4 weeks a cardiology registrar re-examined the patient proformas, patients ED notes which are scanned on to a patients folder on the hospital electronic database called the patient center. This database also has scanned copies of patients ECGs. Missing information from the proformas such as details of the patients symptoms and past medical history was obtained from the scanned copies of doctors notes and old historical documents such as clinic letters, discharge letters and old ECGs. Angiograms and chest Xrays were also examined. Based on the clinical presentations the patients were categorized as having symptoms suggestive of either definite or suspected acute coronary syndromes or otherwise.

Results: Total number of patients who underwent troponin testing were 500. Total number of tests performed were 1119. Total number of patients who undersent troponin testing but did not present with symptoms suggestive of acute coronary syndrome were 62%. Patients who presented with symptoms suggestive of acute coronary syndrome were 8% only. Patients whose symtoms were suspiscious for angina were 8%.Others were heart failure 5%, Arrhythmia 3%, syncope 7% and others. The majority of patients with non-ischeamic symptoms had respiratory symptoms (18%), Gastrointetinal symptoms (9%), central nervous system symptoms (10%) musculoskeletal symptoms(7%) and others. Only 16% of Troponin tests done in patients with non-ischeamic symptoms were positive. The rest were all negative.Only 7 out of 310 patients with nonischeamic symptoms underwent coronary angiograms.

Conclusion: Most Troponin tests in the ED are done in patients presenting with symptoms not suggestive of acute coronary syndromes. Most of the times these tests are normal. Even if abnormal these do not result in utilisation of invasive coronary investigations or revascularisation.

26. Frequency and outcome of false activation cardiac catheterisations in a primary percutaneous coronary intervention service

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Introduction: Primary PCI (PPCI) is the preferred treatment for patients presenting with ST-elevation myocardial infarction (STEMI). Strategies to minimise PCI-related delay include bringing patients directly to the cath lab from the community via emergency ambulances. Invariably a number of false-positive activations of the PPCI team occur. The aim of this study was to evaluate the frequency and characteristics of false-positive STEMI diagnosis.
Methods: Since 30th September 2013 the Belfast Trust has provided a regional 24/7 PPCI service covering approximately 75% of the Northern Ireland population. It had provided a 24/7 service for the Belfast population since 2009. Electrocardiograms (ECGs) of suspected STEMI patients are faxed to the coronary care unit by emergency department or Northern Ireland Ambulance Service staff (NIAS). Patients are accept or declined for PPCI using a regionally-agreed protocol. A false activation in this study was defined as a lack of culprit lesion at angiography or decision made not to proceed with diagnostic coronary angiography. The frequency and characteristics of these patients were reviewed.
Results: From September 2013 through February 2014, 337 patients underwent PPCI. Sixty patients were identified as false activations. Seventeen were excluded for the following reasons; coronary artery dissection, surgical disease, failed PCI, vessel not suitable for PCI, embolic disease and completed infarct. Of the 43 remaining patients 31 patients were male, one was of African ethnicity and most (23) were over 75 years of age. Fifty-six % of false activations occurred between 8.00am and 5.00pm. 51% of referrals were made by the ambulance service, 39% were from accident and emergency and 10% were hospital inpatients. Thirty % (13) did not have symptoms of chest pain. Six patients did not proceed to diagnostic coronary angiogram at the cardiologists decision. At angiography 40% demonstrated normal coronary angiography, 60% had coronary artery disease without culprit lesions. Twenty three patients were found to have a high sensitivity troponin greater than 14ng/L. The mean time to discharge was 3.95 days.
Conclusions/Implications: False activation accounted for 13% of patients admitted to the cardiac catheterisation laboratory for treatment of STEMI. Adherence to protocol may reduce the number of false activations further. False activations were more likely to occur during working hours.

27. Suspected left bundle branch block equivalent STEMI: analysis in a primary PCI programme

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Background: Patients presenting with suspected acute left bundle branch block ST elevation MI equivalent (aLBBB-STEMI) present a higher risk of a false positive diagnosis and have a worse prognosis when confirmed. The latest North American STEMI guidelines restrict the indication for PPCI for patients with aLBBB-STEMI to those with specific acute ECG features (Sgarbossa criteria). We sought to determine the accuracy of the presenting diagnosis, and the extent to which a high Sgarbossa score correlated with confirmed aLBBB-STEMI in a large cohort of patients presenting to a PPCI centre with acute myocardial infarction (AMI).
Methods: We interrogated the database of a register of all acute coronary syndrome cases presenting to a PPCI tertiary care centre in the southern region of Ireland from 2006 to 2013 inclusively. All cases classified on referral or admission as STEMI with LBBB were identified. The diagnostic ECG was used to confirm the presence of LBBB and the Sgarbossa criteria were applied: ST elevation > 1mm in a lead with a positive QRS complex (5 points); ST depression in lead V1, V2 or V3 (3 points); ST elevation > 5mm in a lead with a negative QRS complex (2 points). STEMI was diagnosed by angiographically confirmed acute occlusion of an epicardial artery with a significant elevation of cardiac troponin T.
Results: Nearly 1900 cases of STEMI were referred for PPCI in the study period. Thirty eight patients were registered as STEMI with LBBB as a referral or admitting diagnosis. LBBB was confirmed in 79% (30/38). Of the patients with confirmed LBBB, nearly half, 46.7% (14/30) had true STEMI. Twenty percent (6/30) of patients with LBBB had a Sgarbossa score of > 3. Of these patients, 83% (5/6) had STEMI, 3 confirmed angiographically, 2 dying before angiography. Fifty seven percent (17/30) of patients with LBBB had a Sgarbossa score of 0. Four of these 17 (24%) patients were diagnosed with STEMI.
Conclusion: True aLBBB-STEMI was found in a very small number of cases presenting for PPCI. Over half of cases referred as aLBBB-STEMI were false positive. An elevated Sgarbossa score was specific in diagnosing aLBBB-STEMI but restricting PPCI only to those with an elevated Sgarbossa score risks missing true aLBBB-STEMI cases. LBBB continues to pose an operational challenge in PPCI protocols and further work is warranted to determine the best approach to these patients.

28. Impact of multi-vessel disease on patients receiving percutaneous coronary intervention or thrombolysis for acute STEMI: a retrospective analysis

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Background: The presence of multi-vessel disease (MVD) in patients with acute ST elevation myocardial infarction (STEMI) has been associated with poor clinical outcomes. We studied a STEMI cohort who received revascularisation through either PCI or thrombolysis for the influence of MVD on major adverse cardiac events (MACE), left ventricular ejection fraction (EF), TIMI flow, and the use of glycoprotein IIb/IIIa inhibitors.
Methods: We retrospectively analyzed a cohort of 215 patients with STEMI from a catheterisation database of sequential STEMI

presentations to the University Hospital Limerick (UHL) from January 2011 to April 2013. MACE was assessed using GP questionnaires, median follow up was 1.8 years (range 9mths to 3 years). Coronary catheterisation lab data and echocardiograms were reviewed to assess TIMI flow and EFs. Categorical variables were compared across groups using the chi-squared test. Means were compared using an independent samples t test. Cox regression was used to predict MACE after adjusting for covariates.

Results: Single-vessel disease (SVD) was present in 104 (48.4%) patients, while 111 (51.6%) patients suffered from multiple-vessel disease (MVD). Patients with SVD were younger than those presenting with MVD (58.8 years versus 63.5 years, p=0.004), and gender was similarly represented in both groups (p=0.909). There is a trend for higher utilisation of glycoprotein IIb/IIIa inhibitors in MVD (43.1%) than SVD (27.8%) however this difference is not statistically significant (p=0.055). The mean EF is clinically similar between MVD (45%, IQR 15) and SVD (50%, IQR 10)(p=0.031), and no significant difference is found in risk factors; hypertension (p=0.295), diabetes mellitus (p=0.140), dyslipidemia (p=0.832), or previous history of MI (P=0.304). There is a trend for more family history of cardiovascular disease in the MVD group (64.6%) compared to those with SVD (51.8%) which is not statistically significant (p=0.092). There is no difference in the post-procedural TIMI-3 flow of culprit lesions (p=0.38). By follow-up the cumulative incidence of MACE was higher for patients with MVD (28.8%), than those with SVD (12.5%) (p=0.003). However, after adjusting for age, gender and variable length of follow up the risk of MACE for those with MVD was 1.6 times the risk for those with SVD, but was not statistically significant (95% CI 0.8-3.1; p=0.16).

Conclusions: There is a trend for increased use of glycoprotein IIb/IIIa inhibitors in MVD. While EF was statistically lower in patients with MVD, this difference is not clinically significant. TIMI3 flow after revascularisation was similar between the two groups. SVD is seen to strike nearly 5 years younger than MVD. The presence of MVD in STEMI patients is associated with a trend for higher risk of MACE on follow up than patients with SVD.

Session: Imaging / Structural

29. Improvements in radial strain detected by speckle tracking echocardiography in patients with hereditary haemochromatosis following venesection

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Aims and Methods: To investigate whether patients with hereditary haemochromatosis without signs of heart failure exhibit subclinical alterations of systolic left ventricular (LV) dysfunction. In the context of iron overload in Beta Thalassemia Major, radial strain has previously been shown to be a better prognostic marker than conventional measurements. We performed a comprehensive evaluation of systolic and diastolic cardiac function using Tissue Doppler Imaging (TDI) and deformation imaging (strain) at initial diagnosis and one year after commencing a treatment programme of venesection.

Results: 56 patients have been assessed at baseline and 15 patients have so far completed follow-up. In the 15 patients who have undergone repeat echocardiography, radial strain showed a significant improvement following venesection from 32.8 (SD ±14.2) to 52.3 (SD ±21.3) (p = 0.006). Average ferritin showed a significant decrease from a mean value of 957 μg/L (SD ±779) pre-venesection to 188 μg/L (SD ±73.7) post-venesection (p = 0.0007). There was no significant change in longitudinal strain or LVEF.

Conclusion: Patients with hereditary haemochromatosis have subclinical alterations of systolic and diastolic LV function. Among all parameters, radial strain was shown to significantly improve following a 1 year course of venesection. This suggests that radial strain, which is synonymous with myocardial twist, could be used to demonstrate improvements in cardiac function in patients with iron overload following venesection.

30. Evaluating the impact of the revision of the taskforce criteria for the diagnosis of arrhythmogenic right ventricular cardiomyopathy (ARVC)

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Background: Arrhythmogenic right ventricular cardiomyopathy (ARVC) is a genetically determined cardiomyopathy associated with ventricular arrhythmia and sudden cardiac death. In 2010 the criteria used to diagnose the condition were revised. The aim of this study was to investigate the impact of the 2010 revisions on the prevalence of ARVC criteria determined by cardiac magnetic resonance (CMR) imaging in a consecutive series of patients with a clinical suspicion for ARVC.

Methods: Retrospective analysis was performed on the CMR scans of all patients referred with a clinical suspicion of ARVC between 2011 and 2013 at a single regional centre. Presence or absence of major and minor CMR task force criteria (TFC) was determined using both the original and the revised criteria. Patient records were also reviewed to determine the prevalence of non-imaging criteria.

Results: 401 consecutive patients were included (mean age 41.2 ± 16.8 yrs, 55% male). 216 patients (53.9%) satisfied at least one non-imaging criterion for a diagnosis of ARVC. Utilising the original criteria, 16 patients (3.9%) satisfied major CMR criteria compared with 12 patients (3%) with the revised criteria (p=0.42).

Of the 16 patients initially classified as having major CMR criteria in the original guidelines 4 (25%) did not fulfil any of the revised TFC. Using the original criteria, 115 patients (28.7%) satisfied minor CMR criteria compared with 18 patients (4.5%) with the revised TFC (p<0.001); 97 patients (84.3%) with minor original TFC did not have any of the revised TFC. This discrepancy was primarily due to the exclusion of regional wall motion abnormalities in the absence RV dilatation as a criterion, in the revised TFC. Using the full original

TFC, 13 patients (3.2%) satisfied criteria for definite ARVC, 22 (5.5%) for borderline ARVC and 72 (18%) had possible ARVC. When the full revised TFC were used 17 patients (4.2%) satisfied criteria for definite ARVC, 20 (5%) for borderline ARVC and 72 (14.5%) had possible ARVC.

Application of the revised CMR TFC significantly improved the positive predictive value for combined CMR major and minor criteria in diagnosing ARVC from 8.4% to 40%. Despite this improvement in specificity, CMRs sensitivity for the diagnosis of ARVC was not significantly reduced (70.6% vs. 84.1%).

Conclusion: CMR plays an important diagnostic role in the evaluation of patients with possible ARVC. The revision of the ARVC task force imaging criteria has improved CMRs accuracy in the diagnosis of the condition.

31. Prospective study of the Belfast TAVI early discharge algorithm

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Introduction: There is considerable heterogeneity within the population of patients treated with transcatheter aortic valve implantation (TAVI) and the procedural methodology. Traditionally TAVI has been performed using transoesphageal echocardiograpy (TOE), and general anaesthesia (GA). In Belfast, TAVI has been performed with a minimalist approach using local anaesthetic. A retrospective analysis was performed of the Belfast TAVI database to identify characteristics that predict shorter, but equally safe patient stays. Following this, an early discharge algorithm was developed. The aim of this study was to perform a prospective analysis of outcomes in our unit since implementation of the early discharge algorithm.

Methods: All patients who underwent TAVI and were successfully discharged from 2013-2014 were included, and analysed by discharge time; same/next day, early (1-4 days), late (> 4 days)). Baseline and procedural characteristics, mortality, serious adverse events, readmission and cost were assessed.

Results: In total 120 patients were included, 26 (21.7%) were discharged the same/next day, 39 (32.5%) early, and 55 (45.8%) discharged in the late group. There was no significant difference in baseline or pre-procedural characteristics. Table 1 details procedural outcomes. The incident of complications was low, and there was no difference in 30-day mortality (0.167) or readmission rates between groups (0.952). Resource analysis revealed the late discharge group cost £3,091.6 more per patient per TAVI than same/next day discharge group.

Conclusion: Same/next day discharge can be performed safely, by appropriate patient selection using the early discharge algorithm, and has significant resource implications.

Table 1- Success Rate, Safety Outcomes and Readmissions

	Same/next day (n=26)	>1-4 days (early) (n=39)	>4 days (late) (n=55)	Level of significance (p=)
Procedural success(%)	24(92.3)	37(94.9)	54(98.2)	0.436
Intraprocedure valve in valve implantation(%) -Emergency -Non-emergency	1(3.84) 0(0.00)	1(2.64) 0(0.00)	0(0.00) 2(3.63)	0.619
Conversion to open surgery(%)	0(0.00)	0(0.00)	0(0.00)	N/A
Unplanned conversion to GA(%)	0(0.00)	0(0.00)	0(0.00)	N/A
Myocardial infarction(%)	0(0.00)	0(0.00)	0(0.00)	N/A
CVA(%) -Ischaemic-disabling (mRS>2 at 90days) -Ischaemic- non-disabling (mRS<2 at 90days)	0(0.00) 0(0.00)	0(0.00) 1(2.64)	0(0.00) 4(7.27)	N/A 0.248
Tamponade(%)	0(0.00)	0(0.00)	1(1.81)	0.551
Conduction disorder requiring pacing(%)	0(0.00)	2(5.12)	8(14.5)	0.059
Vascular injury(%) -Major -Minor	0(0.00) 1(3.84)	0(0.00) 0(0.00)	1(1.81) 2(3.63)	0.609
Bleeding(%) -Major -Minor	0(0.00) 0(0.00)	0(0.00) 0(0.00)	1(1.81) 2(3.63)	0.457
Dialysis(%)	0(0.00)	1(2.64)	2(3.63)	0.619
Subsequent valve in valve implantation(%)	0(0.00)	0(0.00)	0(0.00)	N/A
30 day mortality(%)	0(0.00)	0(0.00)	3(5.45)	0.167
Readmission 30 days(%)	1(3.84)	2(5.12)	3(5.45)	0.952

All variables categorical and analysed with Chi square test. CVA= cerebrovascular accident, mRS= Modified Rankin Score, N/A= not applicable.

32. Transaortic TAVI is a valid alternative to the transapical approach with comparable procedural outcomes

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Introduction: Transapical access has dominated as the alternative to transfemoral TAVI to date. Feasibility of the transaortic approach has recently been demonstrated by a number of groups and may provide a superior or at least equivalent alternative. The objective of this study was to compare outcomes of transapical versus transaortic TAVI utilizing meta-analysis of data published to date.
Methods: Data was extracted from eligible studies reporting post procedural outcomes from patients undergoing transapical and transaortic TAVI. A random-effects meta-analysis was performed using DerSimonian Laird between-study variance estimation. Multilevel mixed effects meta-regression with fixed moderator variable for access type was run using package meta (v3.2-0) and metafor (v1.9-2) in the R statistical software version 3.0.2 (cran.rproject.org), and SAS (v 9.3).
Results: A total of 10 studies and 1736 patients were included. A total of 193 patients underwent transaortic and 1543 transapical TAVI. There was no difference identified in STS or EuroSCORE between groups confirming comparability. No difference in 30-day mortality was identified. There were no differences identified in procedural success rate, stroke and transient ischaemic attack (TIA) incidence, major bleed or pacemaker insertion rates. In addition, the incidence of clinically significant paravalvular regurgitation (PVR) was the same between groups.
Conclusion: Provisional comparison of transapical and transaortic approaches revealed equivalent outcomes in 30-day mortality, procedural success, stroke and TIA incidence and pacemaker insertion rates. This preliminary analysis suggests transaortic is a valid alternative to transapical TAVI. Furthermore it is reasonable to suggest that centers attain experience in both considering transaortic access may be more suitable in certain patients such as those with a poor ejection fraction.

	Transaortic		Transapical		p-value	I^2 (%)	Heterogeneity p-value
	Mean	95% CI	Mean	95% CI			
STS Score	11.20	9.04,13.36	10.83	8.57,13.08	0.746	0	0.642
EuroSCORE	18.51	9.03, 28.0	23.12	10.62,35.61	0.470	98.0	<0.001
	Percent	95% CI	Percent	95% CI			
Success rate	96.3	90.9, 98.5	93.7	83.4, 97.8	0.319	66.2	0.002
30-day mortality	9.44	5.95, 14.67	10.36	6.4,16.35	0.701	0	0.843
Stroke and TIA	1.80	0.52, 6.02	2.25	0.57, 8.50	0.749	51.5	0.037
Major bleed	5.76	0.96, 27.85	5.51	0.61, 35.57	0.967	95.4	<0.001
Pacemaker	6.06	3.19, 11.20	7.43	3.61, 14.68	0.572	46.4	0.013
Paravalvular regurgitation	6.7	2.48, 16.84	11.02	3.10, 32.37	0.430	64.8	<0.001

33. Impact of mitral regurgitation on clinical outcomes of patients with low-flow, low-gradient severe aortic stenosis undergoing transcatheter aortic valve implantation

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Objectives: We assessed the impact of mitral regurgitation (MR) on clinical outcomes among patients presenting with low-flow, low-gradient (LEF-LG) severe aortic stenosis (AS) undergoing transcatheter aortic valve implantation (TAVI).
Background: Up to 1 in 6 patients undergoing TAVI present with LEF-LG and concomitant relevant MR is present in 30-55% of these patients. The impact of MR on clinical outcomes of LEF-LG patients undergoing TAVI is unknown.
Methods: Of 606 consecutive patients undergoing TAVI, 113 (18.7%) patients with LEF-LG severe AS (mean gradient [MG] ≤40mmHg, aortic valve area [AVA] <1.0cm2, left ventricular ejection fraction [LVEF] <50%) were analysed. LEF-LG patients were dichotomized into ≤mild MR (n=52) and ≥moderate MR (n=61). Primary-endpoint was all-cause mortality at one year.
Results: Moderate or severe MR was predominantly functional (72%). No differences in mortality were observed at 30-days (p=0.76). At one year, LEF-LG patients with ≥moderate MR had an adjusted 3-fold higher rate of all-cause mortality (11.5% vs 38.1%, adj hazard ratio [HR] 3.27 (95% confidence interval [CI] 1.31-8.15), p=0.011), as compared with LEF-LG patients with ≤mild MR. Mortality was mainly driven by cardiac death (adj HR 4.62, p=0.005). Degenerative MR independently predicted one-year mortality among ≥moderate MR patients (adj HR 3.38, p=0.01). At one year, ≥moderate MR improved in 31%, remained unchanged in 26% and worsened in 3%.
Conclusions. Moderate or severe MR is a strong independent predictor of late mortality in LEF-LG patients undergoing TAVI. These findings have important implications for patient selection and management strategies for LEF-LG patients considered for TAVI.

34. Clinical outcomes of patients with low-flow, low-gradient severe aortic stenosis according to treatment modality

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Objective: We aimed to compare clinical outcomes among patients presenting with œclassical low-flow, low-gradient severe aortic stenosis according to the assigned treatment modality. Methods. Between April 2005 and December 2012, 210 patients with low-flow, low-gradient severe AS (indexed aortic valve area [AVA] ≤0.6cm2.m-2, left ventricular ejection fraction [LVEF] <50% and mean gradient (MG) <40mmHg) underwent treatment allocation to either medical therapy (MT) (n=47) surgical aortic valve replacement (SAVR) (n=52) or transcatheter aortic valve implantation (TAVI) (n=111). Pre-procedural non-invasive and invasive hemodynamic indices, coronary artery disease (CAD) complexity and procedural characteristics were compared between groups. Primary end-point was all-cause mortality at 1-year.

Results: Baseline characteristics were similar between patients allocated to MT and TAVI, whereas SAVR patients were younger (MT 82.47±5.03 vs SAVR 78.43±54.10 vs TAVI 82.04 ±5.08 years, p<0.0001) and lower risk (STS score MT 10.82±7.25 vs SAVR 4.85±2.95 vs TAVI 7.88±4.80 %, p<0.001) . CAD complexity was significantly greater among MT patients (SYNTAX score MT 29.18±17.89 vs SAVR 20.38±12.54 vs TAVI 21.58±14.09, p= 0.036). Pre-procedural AVA (MT 0.69±022, SAVR 0.73±0.23, TAVI 0.74±0.21cm2, p=0.40) and MG (MT 25.23±9.33 vs SAVR 29.26±9.54 vs TAVI 28.54±10.30 mmHg, p=0.09) were similar between groups, but patients undergoing SAVR had a higher baseline LVEF (MT 30.28±9.72 vs SAVR 38.90±11.94 vs TAVI 34.35±11.32%, p=0.001) and lower prevalence of moderate/severe mitral regurgitation (MT 52.3% vs SAVR 30.0% vs TAVI 52.8%, p=0.02). SAVR patients also had lower pulmonary artery systolic pressures (MT: 59.71±15.29 vs SAVR 50.63±16.15 vs TAVI 58.17±14.72 mmHg, p=0.023) on pre-procedural right heart catheterization. Contractile reserve was present in 68.8% of patients undergoing dobutamine stress echocardiography. At 12-months, the primary endpoint was significantly lower among both SAVR (13.5% vs 57.4%, HR 0.17, 95% confidence interval [CI] 0.076-0.40, p<0.001) and TAVI (20.7% vs 57.4%, HR 0.28, 95% CI 0.16-0.49, p<0.001) as compared with MT patients. No significant differences in the primary endpoint were observed between SAVR and TAVI patients (p=0.27).
Conclusions: Among patients with low-flow, low-gradient severe AS, SAVR and TAVI improved survival compared with MT. Clinical outcomes of TAVI and SAVR appeared similar among appropriately selected patients with low-flow, low-gradient severe AS.

35. How effective are our standard tools for predicting new onset AF in a population at risk for Heart Failure

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Introduction: Within an at risk population, robust predictors of new onset atrial fibrillation (AF) risk have yet to be defined. We thus sought to characterize the BNP profiles and echocardiographic findings in patients before and following a diagnosis of new onset AF.
Methods: This is a prospective cohort study using data from the STOP-HF programme in St. Vincents University Hospital, which follows patients at risk for the development of heart failure We assessed the clinical, biochemical and Doppler-echocardiographic features of new-onset AF cases admitted to hospital between 2005 and 2012.
Results: During an average follow-up of 3.7 years (median 4.2), 24 participants developed incident AF (rate 4.2/1,000 person-years). There was no significant gender predisposition identified (1.32%[F] vs 1.84%[M]).

	Non AF	AF
N	1516	24
Age median[IQR]	65 [57.5:71.4]	70.6 [63:74.3]
Male N(%)	693 (45.7%)	13 (54.2%)
EF median[IQR]	66 [61:72]	65 [60:71]
LAVI median[IQR]	25.1 [21.1:30.6]	28.7 [23.0:37.4]
SBP median[IQR]	138 [125:152]	146 [136:158]
BNP median[IQR]	23 [11:48]	36 [23:46]

Independent predictors of AF inthis population were age, left atrial volume index (LAVi) and baseline BNP. However, these variables explained less than 2% of the variation in AF diagnosis. Changes in BNP also predicted AF development but added little to the power to predict.
Conclusion: While BNP and LAVi measurements do identify to a degree those at risk for new onset AF these data do demonstrate that in general clinical, biochemical and Doppler-echocardiographic indicators are not powerful predictive tools for incident AF. More robust indicators are needed to identify those at highest risk for this rhythm irregularity.

36. Audit of time in therapeutic range with warfarin in patients with mechanical prosthetic heart valves

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RCPI

Introduction: Increasing numbers of patients are receiving mechanical prosthetic heart valves for significant valvular heart disease in an aging population. However, these patients require lifelong anticoagulation with warfarin. Warfarin, although very effective, requires monitoring and carries substantial, bleeding risks if not adequately managed. This audit was conducted to assess warfarin management in this cohort of patients in Beaumont Hospital.
Methods: INR levels, location of valve replaced, sex and age were recorded and analysed in patients with mechanical prosthetic valves attending the Warfarin Clinic in Beaumont Hospital from 1-Jan-2008 → 31-Dec-2012. All data was derived from the DAWN database, PIPE system and patients medical records in Beaumont Hospital.
Results: 133 patients were identified, with a mean age of 68 (SD: ±9.89, range 35-94). 51% were male and 49% female. These patients contributed 8268 INR results and 406 patient years across the audit period. Overall 58.26% of INR tests were within the TTR. Of the 41.74% of INR results that were outside the TTR, 20.91% were above and 20.78% were below. Altogether these patients spent 69.68% of the days within the TTR.
Conclusions: This audit concludes that the time in TTR of patients with mechanical prosthetic valves is lower than what would be considered ideal. A large percentage of INR results fall outside the TTR and a high percentage of days are spent outside the TTR, potentially predisposing patients to possible complications. This

indicates that a further refinement in the dose management and monitoring of warfarin in these patients is necessary.

37. The utility of cardiovascular resonance imaging in the assessment of cardiac, pericardial and mediastinal masses: a 3 year experience

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Background: Primary cardiac tumours are rare however reliance on cardiac magnetic resonance imaging (CMR) for further assessment of all mass lesions affecting the heart, pericardium and mediastinum following initial identification by other imaging modalities is anecdotally increasing. We aim to review the diagnostic accuracy of CMR in this setting compared with the other imaging modalities.
Methods: We reviewed a series of 49 patients referred to the CMR service for further assessment of an identified mass lesion across a period of 3 consecutive years, 2011-2013 inclusive, at a single centre.
Results: 49 patients (24 male, aged 16-88 years, median 56±30 years) with suspected cardiac, pericardial or mediastinal masses underwent CMR. Prior imaging consisted of transthoracic echocardiography TTE (63%), computed tomography CT (18%), transoesophageal echocardiography TOE (17%) and magnetic resonance imaging of thorax (2%). In 34 of the referred cases the suspected mass lesion was identified and characterised by CMR. In the remaining 15 cases no mass lesion or other explanation was identified. In 4 of these cases clinical history and further analysis of the initial imaging raised the probability of thrombus with resolution in the interval between. CMR reports identified mass lesions as persisting thrombus (26%), left atrial myxoma (15%), pericardial cyst (12%), prominent anatomical feature such as crista terminalis (10%), metastatic neoplastic disease (8%), fibroelastoma (8%), lipoma (6%), pericardial fibroma (3%), endomyocardial fibrosis (3%), sarcoma (3%) and infiltrative primary chest tumour (3%). The positive predictive values of each imaging modality when diagnoses were confirmed by clinical follow up, response to treatment, imaging follow up or histopathology are as follows: CT (55.6%), TTE (45.2%), TOE (25%). CMR has a positive predictive value of 91% in this series. Left ventricular ejection fraction (range 15-80%) and right ventricular ejection fraction (range 11-77%) did not influence diagnostic accuracy. Cases incorrectly diagnosed by CMR included one case each of atrial myxoma and thrombus and failure to tissue characterise a sarcoma.
Conclusion: CMR has a high positive predictive value in the characterisation of cardiac, pericardial and mediastinal mass lesions. This is reassuring as to the utility of CMR both in the diagnosis and follow up of such lesions.

38. Incomplete right bundle branch block or a longer conduction pathway " A question of sport"

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Introduction: Incomplete Right Bundle Branch Block (IRBBB) usually is thought to be associated with abnormalities of the peripheral Purkinje system. The ECG pattern is more often noted in athletes engaged in sports, with a striking male preponderance. It has been suggested that the right ventricular (RV) conduction delay is not within the His-Purkinje system, but is caused by the enlarged RV cavity size and the resultant longer conduction path especially in Athletes with RBBB1. We sought to elucidate this issue.
Methods: The study population consisted of 43 highly-trained male first team Kilkenny Hurlers and 18 age-matched healthy sedentary controls. An Electrocardiogram was performed of all subjects. RV% strain was measured using 2D speckle based automated functional imaging software. We used the echo criteria for ARVC diagnosis to measure the right ventricle size. Measurements included the RV Tei index (systolic and diastolic function) and the total annular plane systolic excursion (TAPSE) of the RV annulus.
Results: IRBBB was more prevalent in the Hurlers 26.8% compared to 7% in the control group. The RV diameter was increased in the Hurlers compared to controls ($P< 0.001$). RV wall size was greater in the hurlers compared to controls ($P= 0.002$). The mean LV and RV% strain were lower in the hurlers compared to controls ($P<0.001$). There was no difference in RV Tei index and TAPSE across all subjects. Sinus bradycardia was significant in the athletes compared to the controls 80% vs.19%.
Conclusion: The finding suggests that the IRBBB pattern in athletes is due to a longer conduction pathway caused by athletic adaption rather then an abnormality of the the peripheral Purkinje system.

[1]Significance of electrocardiographic right bundle branch block in trained athletes. Am J Cardiology 2011 Apr 1;107(7):1083-9.

39. Cardiac arrest due to acute coronary syndrome : a 4 year observational study of patient characteristics and outcomes

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Introduction: The survival rate to hospital discharge of patients who present with acute coronary syndrome complicated by cardiac arrest is reportedly as low as 30%. We sought to identify characteristics and outcomes of such patients, presenting to a single institution over a 4 year period.
Methods: We collected data on all patients with a cardiac arrest caused by acute coronary syndrome (ACS), who were admitted to the Intensive Care Unit from January 1st 2010 to December 31st 2013. Demographic and clinical features were recorded, including gender, age, average temperature in the first 24 hours post arrest, location of arrest and presenting cardiac rhythm. The outcomes reported include GCS at the time of discharge from ICU, 6 month survival as well as left ventricular function at baseline and at a 6-month follow up.
Results: There were thirty one arrests caused by ACS - 24 patients were male and 7 female. Mean age was 66 years (48-88 years). Cardiac arrests were either out of hospital (n = 15) or in hospital (n = 16). Ventricular fibrillation was the arrhythmia in all out of hospital arrests and in 56% of in-hospital arrests. Other rhythms

included pulseless electrical activity (19%), ventricular tachycardia (13%) and asystole (6%). The arrhythmia was not specified in 1 case. 17 patients underwent therapeutic hypothermia according to ICU criteria (mean temperature 34.14ºC). Four patients failed to achieve target temperature of < 34ºC. The average temperature of the non-cooled group was 36.3ºC. Reasons for not inducing hypothermia included GCS>13, haemodynamic instability and death. 71% of patients survived to discharge from ICU and all of these were still alive at 6 months follow-up. 65% had GCS ≥ 13 on discharge. Mean left ventricular ejection fraction was 42% on admission and 45% at a 6 month follow-up.

Conclusions: In this study, the majority of patients presenting to ICU following a cardiac arrest due to acute coronary syndrome survived for a period of at least 6 months. Most survivors had a good neurological recovery as assessed by GCS scores, without deterioration in left ventricular function.

40. Highly sensitive troponin T allows earlier diagnosis of myocardial infarction but this advantage is not achieved in the real world

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Introduction: Serum troponin measurements are central to the diagnosis and risk stratification of myocardial infarction (MI). Utilisation of high sensitivity troponin T assays (hsTnT) allows earlier diagnosis of MI when compared to previous generation assays. The European Society of Cardiology advocates that using two hsTnT samples taken 3 hours apart is sufficient for accurate diagnosis and rule out of MI. Inpatient data was reviewed to establish if these recommendations were met.

Methods: This study was performed in Altnagelvin Hospital, Northern Ireland over one month, January 2014. Inpatient hsTnT samples were reviewed from 3 wards (General Cardiology, Coronary Care and the Acute Medical Unit (AMU)). Patients were included if their presenting symptoms were consistent with possible acute coronary syndrome (ACS). The 99th centile for the hsTnT assay is 14ng/dL. All statistical analyses were performed with SPSS version 20. Ethical approval was not required as this was part of a service evaluation project.

Results: Overall 197 patients were included. Mean age was 65 (Standard deviation (SD) 16), and 121 patients were male (61%). In total 411 hsTnT samples were sent during the study period. The median number of hsTnT samples per patient was 2 (SD, 1). However, 50 patients (25%) had only one sample, of which 25 patients (50%) had hsTnT ≥14ng/dL. Furthermore, 60 patients (30%) had 3 or more samples. Patients were more likely to have only one sample if they were admitted to the AMU (odds ratio 5.9; 95% CI 2.8-12.8). The median time interval between sample 1 and 2 was 11 hours (Interquartile range 13 hours). One-way analysis of variance did not indicate any difference in sampling interval between wards (P=0.17).

Conclusion: These data show that achieving the benchmarks outlined in current ESC guidelines for hsTnT is difficult. A significant proportion of patients had one sample despite half of these patients having a hsTnT concentration ≥14ng/dL. This investigation has demonstrated that this is more likely to occur when patients are admitted through the AMU rather than through a specialist cardiology service. Many patients had greater than 2 hsTnT samples. Contemporary published investigations do not support multiple sampling with hsTnT and this may represent an inefficient use of resources. Sampling interval was larger than that suggested by current ESC guidelines. The benefits of early diagnosis or exclusion of MI include earlier prescription of evidence based therapy and earlier discharge of patients without MI. The absence of a difference in sampling interval between wards indicates systemic inefficiency within the hospital. These data suggest that the benefits of hsTnT are not currently being fully realised. Quality improvement strategies have since been implemented to improve on current practice.

41. An experience of a protocol based approach to the administration of vernakalant hydrochloride for patients undergoing rhythm control strategy for stable, recent onset, non valvular atrial fibrillation

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Atrial Fibrillation (AF) is the most common cardiac arrhythmia affecting less than 1% of people under 65, but more than 10% of those over 85 years of age. We assessed the safety, efficacy and outcomes of a four stage protocol based approach when used for the administration of Vernakalant hydrochloride for patients undergoing rhythm control strategy for recent onset stable non valvular atrial fibrillation (AF) from January 2012 to January 2014. Twenty nine patients with average symptom duration of 16.1 hours were deemed suitable for rhythm control strategy with Vernakalant hydrochloride, 86% (25) of patients cardioverted to sinus rhythm in an average of 16.5 minutes with no clinically important drop in blood pressure (>30%). All patients were commenced on appropriate dose and duration oral anti coagulation. There were no thromboembolic or hemorrhagic events at 3 month follow-up; 3 patients had re- occurrence of AF. Short symptom duration is clearly the most important predictor of successful cardioversion with Vernakalant, the high cardioversion rates observed in our study (86%) which are also demonstrated in the ACT trials (70-80%) when given early (≤ 72 hours) reinforces the efficacy and safety of early administration of Vernakalant. The initial experience of this protocol is that it is safe, practical and an effective means of ensuring a standardized and reproducible approach to the administration of Vernakalant to patients with stable recent onset, non valvular AF undergoing rhythm control strategy.

42. Safety of a dual antiplatelet regimen following percutaneous left atrial appendage closure in high risk patients - a single-centre experience

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Introduction: Left atrial appendage (LAA) occlusion has been shown to be a legitimate alternative therapy to oral anticoagulation (OAC) in reducing thromboembolic risk in patients with non-valvular

atrial fibrillation (AF). Currently full OAC is recommended for up to 6 months after closure and is associated with increased haemorrhagic risks in many high risk patients.

Objective: To evaluate patient safety, feasibility, short and midterm outcomes following percutaneous left atrial appendage (LAA) closure in patients with high thromboembolic risk, in whom long-term OAC was contraindicated or impractical.

Methods: Retrospective single centre study of all patients with LAA occluder devices from October 2009 - November 2013. Short term OAC was applied in the early period, and from early 2012- dual antiplatelet therapy (DAPT) for 6-8 weeks followed by a single agent antiplatelet. Routine follow up transoesophageal echo (TOE) was performed at 6-10 weeks, and clinical assessments at 6 and 12 months following procedure.

Results: A total of 81 (96%) patients, with bleeding issues outruling long term OAC, had a device implanted successfully, of which 95% were performed as day cases under conscious sedation. 76% were male with a mean age of 76+/-16 years, and a mean CHADS2-VASc score of 5.1+/-2.4. Serious procedural complications included 1 cardiac tamponade requiring immediate pericardiocentesis (survived initially then died day 7 from urinary sepsis) and 1 TIA. Follow up TOEs mean 135 days showed well-seated devices in 96% with minor gaps (5-7mm) in 3.6%. Thrombi were found on the atrial aspect of devices in 5 patients (6%), all of whom had been taking Dabigatran (4 on 110mg BD and 1 on 150mg BD). Prolonged administration of 150mg BD Dabigatran resolved thrombi without sequelae. No device related thrombi were observed among the 34 patients who received only DAPT until follow up TOE. At max 3 year follow up (mean 15 +/-10 months), 1 patient in the DAPT treated group had a TIA, i.e. 2.94% vs expected 5.3% annual stoke risk as predicted by mean CHADS2-VASc score for this group.

Conclusions: We find percutaneous LAA occlusion a feasible, safe and effective outpatient procedure for stroke prevention in patients with AF and high bleeding risks. Short term Dual antiplatelet therapy was a particularly safe and effective regimen vs OAC, and remains our standard therapy in this challenging field.

43. A retrospective analysis of the use of new oral anticoagulants (NOAC's) in a level 3 hospital

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Background: New Oral Anticoagulants (NOACs) are being prescribed more frequently as an alternative to warfarin; the indications being non-valvular atrial fibrillation, venous thromboembolism (VTE) treatment, and VTE prophylaxis in patients undergoing hip or knee replacement. Dosing rivaroxaban is based on indication and renal function, with no dose adjustment for age, whereas dabigatran and apixaban doses are based on indication, renal function and age. Recent media attention has suggested inappropriately low doses of NOACs used in many patients.

Aim: To look at rates of prescribing of different NOACs, and to determine suitability of choice of NOAC and dose prescribed.

Methods: We used data from our pharmacy NOAC registry, which collects data on all inpatients who were admitted on a NOAC, or had a NOAC prescribed during their admission. We selected data from January 2014 until April 2014, and included choice of NOAC and dose. We calculated each patients eGFR using MDRD, as creatinine levels, age, sex and race were easily accessible. The pharmacy did not hold data on each patients indication for NOAC. However, those diagnosed with VTE in our hospital had this information available in their electronic record. Our hospital does not have orthopaedic surgery on site, and thus those patients prescribed a NOAC without evidence of VTE were deemed to be for non-valvular Atrial Fibrillation.

Results: 97 patients (49 female) were prescribed a NOAC over the study period. The numbers prescribed each dose of NOAC, their mean eGFRs and mean ages are: rivaroxaban 20mg once daily, n=29, 81.8mls/min, 69 years; rivaroxaban 15mg once daily, n=14, 55.6 mls/min, 78 years; rivaroxaban 15mg twice daily, n=14, 82.9 mls/min, 71 years; dabigatran 150mg twice daily, n=17, 65.8mls/min, 82 years; dabigatran 110mg twice daily, n=20, 62.5 mls/min, 83 years; and apixaban 2.5mg twice daily, n=2, 55.5mls/min, 85 years. No patients were prescribed apixaban 5 mg twice daily. All patients on rivaroxaban 20mg and 15mg once daily, dabigatran 150mg and 110mg twice daily, and apixaban 2.5mg twice daily were being treated for atrial fibrillation. All patients on rivaroxaban 15mg twice daily were being treated for VTE. In our hospital, dosing of rivaroxaban correlates with the average eGFR. Dabigatran at both doses 150mg and 110mg were similar in average eGFR (65.8 vs 62.5) average age (82 vs 83) and indication (all patients in both groups treated for atrial fibrillation). Based on eGFR, age and indication only, 14 of 17 (82.4%) of the Dabigatran 150mg were on too high a dose, and 3 of 20 (15%) of the Dabigatran 110mg were on too low a dose.

Conclusion: Rivaroxaban is currently prescribed appropriately based on indication and renal function. However these data suggest that, when dosing dabigatran, factors other than indication, renal function and age may be used.

44. Use and safety of novel oral-anticoagulants (NOACS) in the prophylaxis of stroke in non-valvularatrial fibrillation (NVAF): a review of prescribing practise and outcomes at the Belfast Health & Social Care Trust

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Background: Atrial fibrillation (AF) is the most common arrhythmia with should be assessed using the CHA2DS2VASC scoring system and oral anticoagulation commenced in patients that score 1 or more. Until recently, VKAs (Warfarin) were the only oral-anticoagulants available for the prophylaxis of stroke in patients with NVAF. The NOACs can be classified into: the direct thrombin inhibitors (e.g. Dabigatran) and direct factor Xa inhibitors (e.g. Rivaroxaban, Apixaban).

Methods and Results: A retrospective study was undertaken to investigate the prescribing of NOACs across the Belfast Trust from

November 2012 to November 2013. 367 patients (Male 50%) with an average age of 70 years (+/- 17 years SD) were identified: (157 (42%) Dabigatran), (119 (32%) Rivaroxaban); (89 (24%) Apixaban). The average CHA2DS2VASC was calculated as 4 (+/- 2SD) with hypertension (51%), stroke or TIA (40%) and vascular disease (35%) identified as the most commonly occurring risk factors for stroke. 21 (5.7%) patients were admitted with bleeding predominantly from a gastrointestinal source (n=8; 2%), intracranial (n=4; 1.0%) or haematuria (n=4; 1.3%). One patient required blood transfusion. 6 patients (1.6%) were admitted with cerebral infarction. NOACs were discontinued in 4 (1%) patients. All-cause mortality was calculated at 6.8% with no patients dying from bleeding.

Conclusions: NOAC prescribing represents 9% of the total percentage of patients receiving oral anticoagulants. This study has shown that NOACs are generally well tolerated, are not associated with life-threatening bleeds and overall appears safe. However, ongoing clinical vigilance in real-world practice is important with these new therapeutic agents.

45. Re-audit of Acute Kidney Injury (AKI) following contrast coronary angiography

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Background: Contrast Induced Nephropathy (CIN), defined as a rise in serum creatinine of >25% from baseline measured at 48 hours following the administration of iodinated contrast media is reported to complicate almost 20% of studies in high risk individuals (e.g. GFR<60mls/min, diabetics patients) [1]. CIN can result in considerable morbidity and mortality [2]. Measurement of serum creatinine as a functional biomarker of glomerular filtration rate (GFR) is widely used for detection of Acute Kidney Injury (AKI), but it lacks sensitivity for early diagnosis, typically rising 24hrs after functional loss. Moreover, as a purely functional marker of glomerular filtration it is unable to differentiate among differing aetiologies of AKI.

Methodology: A previous audit of 77 patients with eGFR<60mls/min undergoing coronary angiography +/- intervention at Craigavon over a 6 month period in 2011 identified an AKI event rate of 11.6%. Whilst comparing favourably with published incidence rates this audit demonstrated a number of shortfalls in our practice which we sought to address. A formalised protocol for the assessment and management of patients with low eGFR was introduced. This included an adjustment in the pre-hydration protocol, the calculation of a pre-angiogram Mehran risk score [3] to identify high risk patients, measures to ensure that nephrotoxic medications were withheld, and specific information and management advice leaflets for GPs and patients. An AKI alert system was commenced to ensure our laboratory processed samples from high risk patients as a priority. A re-audit of our practice took place over 6 months from August 2013 - February 2014. All elective outpatients presenting for angiography with an eGFR< 60mls/min were included. Data were obtained from lab reporting systems and from GPs. Demographics, risk factors and renal function before and at 48 hours post angiogram were recorded. AKI was defined as a creatinine rise of >25% at 48 hours. Iohexol (Omnipaque '350'), a low osmolar contrast media, was used for all cases. Patients received a written information leaflet upon discharge and all GPs were posted AKI advice letters. A checklist of all patient blood results was recorded and patients were telephoned at 48 hours to inform them to restart withheld medications if deemed appropriate or if necessary AKI advice was given.

Results: Table 1 summarises baseline demographics, risk factors and medications. We identified 181 (14.2%) patients out of 1,747 with eGFR<60mls/min compared to 77 (12.1%) of 634 patients in 2011. Five patients (2.7%) developed AKI compared with 9 (11.6%) of cases in 2011.

Table 1: Patient demographics

AKI risk factor	N (%)
Cases	181
Male	108 (60)
Stage 3A (GFR 45-59)	128 (71)
Stage 3B (GFR 30-44)	46 (25)
Stage 4 (GFR 15-29)	7 (4)
Stage 5 (GFR <15)	0 (0)
Metformin	71 (39)
ACE inhibitor	65 (36)
Angiotension blocker	27 (15)

Conclusion: Our quality improvement programme, engaging patients and the multidisciplinary healthcare team has focused on each stage of the process to deliver safer contrast studies. The introduction of a comprehensive protocol for identification of high risk patients and appropriate pre and post procedural care reduced the incidence of AKI related to coronary interventional procedures.

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46. "It hasn't really impacted on my life, it was only a mild heart attack". Patients presenting with NSTEMI lack understanding of their illness and have less motivation for lifestyle changes

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Background: Treatment type is predicated by clinical presentation in acute Myocardial Infarction (MI), but despite all patients being told they have had a "heart attack" there are considerable differences in terms of the speed and urgency with which they are admitted to the catheter laboratory and discharged from hospital. To date little is known about the impact of the different treatments in the trajectory of the patients experience after their first MI. This study aimed to explore the impact of these different treatment experiences on patients illness perception and motivation for behavioural changes one year after MI. Methods Semi-structured, domiciliary interviews (n=15), were conducted with three groups of MI patients one year after their event:- Primary Percutaneous Coronary Intervention - PPCI (n=5). Thrombolysis (n=5). Non ST Elevation MI - Â NSTEMI (n=5). Themes were identified and refined using the framework method of analysis1 and compared between groups.
Results: Patients who presented with a STEMI and received either PPCI or thrombolysis had similar perceptions of their illness at one year as a serious life threatening event. The urgency of treatment was a major factor in both groups understanding of the gravity of their MI. Fear of having another event caused patients to be less confident and more cautious about day to day activities. Patients in these groups viewed their illness as a long term condition and had undertaken conscious lifestyle changes to reduce the risk of a further event. In contrast, patients with a NSTEMI experienced uncertainty about symptoms and diagnosis, which caused misconceptions about the severity of their condition at one year. Many viewed their illness as a mild event and this led to poor attendance at cardiac rehabilitation and less motivated in the uptake of healthy lifestyle changes.
Conclusion: Patients with NSTEMI in this study expressed very different perceptions of their illness than those experiencing STEMI at one year. The initial uncertainty about diagnosis and lack of understanding about their condition had a negative impact on the NSTEMI group, causing misconceptions about the severity of their condition. Patients clinical presentation and treatment experience during an acute myocardial infarction can impact on their illness perception and motivation for behavioural changes. Health-care practitioners should consider the potential for such differences when individualising secondary prevention strategies, as illness perception may affect patients motivation for behavioural changes and uptake of cardiac rehabilitation.
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47. Atrial Fibrillation in the community

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Introduction: Atrial fibrillation (AF) is the commonest cardiac arrhythmia occurring in 1-2 % of the general population. It is associated with a fivefold increase risk of stroke, with 1 in 5 of all strokes being attributed to this arrhythmia. Oral anticoagulants (OACs) reduce AF induced thromboembolic events (1). As AF is under recognised in the community (2), those at danger are at increased risk of stroke.
Method: A retrospective analysis of AF management in the community, from 5 different GP practices across Northern Ireland, was performed. Ten patients were randomly selected from each practice, which included two in Belfast, and one in Antrim, Coleraine, and Derry. Each patients AF management was reviewed with specific focus on OACs. Results: 50 patients were included in this study, 56% male and 28% under 65 years old. All patients had at least one AF related hospital admission. The average time between data collection and hospital admission was 6.5 +/- 4.25 years. 38% of patients were paroxysmal at the time of discharge from hospital. 16% did not have thyroid function tests checked and 26% did not have a transthoracic echocardiogram performed at any stage between diagnosis and data collection. The average CHA2DS2-VASc score was 3.6. 70% of patients were on warfarin, 28% on aspirin and 2% did not receive any thromboembolic prophylaxis. No patients were taking novel OACs. Among patients on aspirin, four had CHA2DS2-VASc score of zero and did not require OAC or aspirin, four were intermediate risk for stroke (CHA2DS2-VASc = 1) when aspirin might still be appropriate, and the rest (6 patients) were in the high risk group. These 6 high-risk patients had no contra-indication for OACs. 28% of our studied population had had a cerebral vascular event confirmed by imaging. Six out of these 14 patients were commenced on warfarin following this index event. On calculating their CHA2DS2-VASc score at the time of stroke all of them should have been taking oral anticoagulation at that time.3
Conclusion: Our study demonstrates that AF management in Northern Ireland is not optimal and results in patients being at an avoidable risk of life threatening emboli. Continuing to increase awareness of the importance of anticoagulation and stroke risk should be pursued. Increased communication between the GP and hospitals should be optimised. References: 1. Carmelo L, Isabelle M, Fabrice E. Management of atrial fibrillation. BMJ 2009;339:doi:10.1136/bmj.b5216 2. O'Connell JE,Gray CS. Atrial fibrillation and stroke prevention in the community. Age Ageing 1996;25:30 3. Guidelines for the management of atrial fibrillation European Heart Journal (2010) 31, 23692429.

48. Education in Atrial Fibrillation

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Introduction: Atrial fibrillation (AF) is under recognised and under treated. Systematic screening increases detection of new cases by 60%.(1) For a primary care population of half a million, there will be about 1000 new cases of stroke per annum.(1) Recognising AF may result in 20% stroke reduction.(2) Aim: We organised an AF teaching session for GP practices with the focus on anticoagulation. We analysed their current management during the teaching session and again 3 years following this index visit. Method: 4 practices were

willing to host us for the brief education session. Topics included assessment of stroke risk (CHA2DS2-VASc score) and the risk of bleeding. GP practices were from across Northern Ireland (Belfast, Antrim, Coleraine and Derry).

Results: Forty patients were randomly recruited, 10 patients from each practice. GPs were not informed of which patients were selected. The average patient age was 73 years old; 50% male. The average index CHA2DS2-VASc was 3.6. 25% of patients were on aspirin during the initial survey. 3% of patients with an elevated CHA2DS2-VASc (≥2) were taking no thrombo-prophylaxis, 24% aspirin and the remaining warfarin. No patients were taking the novel oral anticoagulants. After 3 years, data collection was repeated for the same patients. 5 were deceased and were excluded from analysis. Although all 5 of these patients had a high CHA2DS2-VASc score (≥2), only 3 were taking anticoagulants. The average CHA2DS2-VASc score increased to 5.15. In the high-risk group, 7% of patients were not on any thrombo-prophylaxis, 19% (6 patients) aspirin and the remaining warfarin. In the 6 patients on aspirin 2 had relative contra indications for anticoagulation (haemorrhagic stroke and recurrent falls) whilst 3 were switched to aspirin post cardioversion due to a low CHA2DS2-VASc at that time and was not re implemented when their risk profile increased.

Conclusion: Although the total percentage of warfarinised patient did not change over the years, there are two important points: 1. The population examined increased in age, as did their average CHA2DS2-VASc score. We should anticipate an increased use of anticoagulation, this was not the case and highlights a lack of thrombo embolic prevention in general practice. 2. Some patients with high CHA2DS2-VASc score were felt inappropriate to re commence anticoagulation post cardio version. This group of patients are at increased risk of thrombo emboli in the future and this risk needs addressed accordingly. In summary, AF management in the community is not optimal. Moreover, the education session failed to show any improvement in management. GPs with specialist AF interests or joint, community or hospital based, clinics might better serve this group of patients. References: 1. Atrial fibrillation in primary care. National priority project March 2008. 2. Carmelo L, Isabelle M, Fabrice E. Management of atrial fibrillation. BMJ 2009;339:doi:10.1136/bmj.b5216

49. Cardiac arrest due to cardiovascular disease: the impact of body temperature on cardiac function

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Introduction: The majority of cardiac arrests are caused by cardiovascular disease and its complications. The 2010 American Heart Association guidelines for post cardiac arrest care recommend the use of therapeutic hypothermia (target 32 - 34ºC) to improve neurological outcomes. A recent study demonstrated no benefit of targeted temperature of 33 ºC vs. 36 ºC, suggesting that the primary intention in temperature management post cardiac arrest should be the prevention of pyrexia. The influence of temperature on cardiac function post cardiac arrest, to our knowledge, has never been assessed. We hypothesized that lower body temperature may lead to reduced cardiac metabolic demand and potentially have a beneficial effect on myocardial function.

Methods: We performed a retrospective study, collecting data on patients who suffered cardiac arrest due to a cardiac cause. The patients were admitted to the intensive care unit between January 1st 2010 - December 31st 2013. We divided those patients into cool (less than 36ºC) and non-cool (greater than 36 ºC) groups, depending on their body temperature within the first 24 hours post arrest. GCS at time of discharge from the ICU was recorded. Ejection fraction at the time of the event and at six months follow up was also noted. The mean change in ejection fraction was compared between the groups, using the 2-tailed independent sample t-test, assuming equal variance.

Results: Forty three patients (35 males and 8 females) were admitted to the ICU following cardiac arrest that was cardiac in origin, during the study period. The mean age at admission was 67 years. Twenty nine patients (67%) had a temperature <36 ºC, 20 of whom underwent therapeutic hypothermia. Eleven of those who were cooled received primary PCI. Fourteen patients had a temperature > 36 ºC. At discharge from ICU a GCS score of ≥ 13 was present in 62% of the cool (< 36 ºC) group and 86% of the non-cool (≥36 ºC) group. Seventeen patients had a follow-up echocardiogram. Data regarding cardiac function is presented in Table 1.

Group (n=17)	Mean EF baseline (%)	Mean EF 6 months (%)	Mean change (%)*
Cool (n=11)	41	45	4
Non-cool (n=6)	42	38	-4

Table 1. LV function at baseline and 6-month follow up. * p = 0.02

In our cohort, left ventricular function in patients with cooler body temperature post cardiac arrest was significantly better at 6 month follow up, compared with patients with a higher body temperature (p = 0.02).

Conclusions: In this study, we have found that prevention of pyrexia in the aftermath of cardiac arrest due to cardiac cause may have a protective effect on myocardial function in the long-term. Additional studies are required to investigate this effect further.

50. Cardiac stress in Post Brain Injury Patients

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Introduction: Cardiac abnormalities including ECG changes have been reported in patients who experience acute brain injuries such as due to Subarachnoid haemorrhage and trauma. We undertook a prospective study to assess the prevalence of ECG abnormalities, changes in cardiac biomarker and ECHO findings to better characterize and ascertain if this phenomenon was a Takostubo like syndrome.

Methods: 21 patients were included in a prospective analysis over 5 months period from November 2013 to March 2014 in single

quaternary referral neurosurgery Centre. These patients were assessed and tested within 48 hours of presentation where possible. Family consent was obtained in all patients. And their clinic status was graded using the World Federation of Neurosurgeon (WFNS) classification using Glasgow Coma Scale (GCS). Patients who were included in the study had 20mls blood sample taken to assess cTNT, CK, and BNP with 12 lead ECG. The ECHO's were assessed independent of the blood results and ECG.

Results: Of the 21 patients 11 were male and 10 were female, range 20 -74 years with mean age of 52.6 years. (43%) were WFNS class 1, (9.5%) were WFNS class 2, and 43% had WFNS class 4, and 1 patient had WFNS class 5. None of the patients experienced adverse cardiac effects or arrhythmias and all survived their neurosurgical illness except for one patient. 24% of subjects had an abnormal cTNT Level range from 0.01-2.44ng/ml with mean value of 0.17ng/ml and only 1 patient had an elevated CK. 29% of patients had elevated BNP (value >100pg/ml) ranges from 100-885pg/ml with mean value of 128pg/ml. 43% of this cohort had ECG changes with ST and T-wave abnormalities and 48% had QTc prolongation with mean QTc of 381msec. 33% of patients had abnormal ECHO findings with Apical and anterolateral wall hypokinesia with mean LVEF 54% and had evidence of diastolic dysfunction on Tissue Doppler Imaging (TDI). All the patients with abnormal ECHO had abnormal ECG, with ST segment changes, T-wave inversion and QTc prolongation and had more severe brain injury score WFNS class 4&5. However only 43% of this subgroup had elevated BNP and 29% Troponin-T elevations. Interestingly, these abnormalities were found in young population group mean age of 49.3years without know prior history of heart disease. Only 3 of these 7 patients with abnormal BNP values correlated with an abnormal ECHO finding.

Conclusion: In this small ongoing study we have found a 33% rate of ECHO abnormalities in patients with severe brain injury that were closely associated with ECG abnormalities and less so with biomarker indices. The ECHO and ECG features had similarities with the Takostubo like syndrome and occurred in younger without known prior CAD but no patients suffered serious cardiac complications.

Session: Brian Maurer Young Investigator Award

51. A comparison of Cardiac Computerised Tomography and Exercise Stress Electrocardiogram Test for the investigation of stable chest pain: the clinical Results of the CAPP Randomised Prospective Trial

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. **Objective:** To determine the clinical differences resulting from a novel diagnostic pathway based on cardiac computerised tomography (CT) compared to the traditional exercise stress electrocardiography testing (EST) in Rapid Access Chest Pain Clinic (RACPC) patients.

Methods: A prospective randomised controlled trial compared selected patient outcomes in standard EST, and cardiac CT coronary angiography groups. 500 RACPC patients with troponin negative stable chest pain and without known coronary artery disease were recruited. Patients completed the Seattle Angina Questionnaires (SAQ) at baseline, 3, 6 and 12 months to assess angina symptoms. Patients were also followed for management strategies and clinical events.

Results: Over the year 12 patients withdrew, resulting in 245 in the EST cohort and 243 in the CT cohort. There was no significant difference in baseline demographics. There was a clinically significant improvement in more SAQ domains from baseline at 3,6, and 12 months in the CT arm compared to EST, suggesting less angina. In the CT arm there was more significant disease identified and more revascularisations. Significantly more inconclusive results were seen in the EST arm with a higher number of additional investigations ordered. There was also a longer mean time to management. There were no differences in major adverse cardiac events between the cohorts. At one year in the EST arm there were more Accident & Emergency Department (A&E) attendances, and subsequent cardiac admission.

Conclusions: Cardiac CT as an index investigation for stable chest pain improved angina symptoms, and resulted in fewer investigations and re-hospitalisations compared to EST.

Clinical Trial Registration:
http://www.controlled-trials.com/ISRCTN52480460

52. The Relationship of Cigarette Smoking with Inflammation and Subclinical Vascular Disease: The Multi-Ethnic Study of Atherosclerosis.

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Background: We sought to assess the impact of smoking status, cumulative pack-years, and time since cessation on three domains of cardiovascular disease (CVD): inflammation, vascular dynamics and function, and subclinical atherosclerosis.

Methods and Results: The MESA cohort enrolled 6,814 adults without prior CVD. Smoking was determined by self-report and urinary cotinine. We examined cross-sectional adjusted-associations between smoking parameters and; inflammation (high-sensitivity C-reactive protein [hsCRP], interleukin-6 [IL-6], and fibrinogen); vascular dynamics and function (arterial distensibility and flow-mediated dilation [FMD]); and subclinical atherosclerosis (coronary artery calcification [CAC], carotid intima-media thickness [CIMT], and ankle-brachial index [ABI]). We identified 3,218 never-smokers, 2,607 former-smokers, and 971 current-smokers. Mean age was 62 years and 47% were male. We found no consistent association between smoking and arterial distensibility or FMD. In contrast, compared to never-smokers, the association of current-smoking with inflammation and atherosclerosis was consistently stronger than former-smoking (e.g. odds-ratio (OR) for hs-CRP>2mg/L of 1.7 [95%CI, 1.5-2.1] Vs. 1.2 [1.1-1.4], OR for CAC>0 of 1.8 [1.5-2.1] Vs. 1.4 [1.2-1.6]). Similar results were seen for IL-6, fibrinogen, CIMT, and ABI. A consistent graded association was seen between pack-years and inflammation. Smokers with hs-CRP>2mg/L were more likely to have high CAC with evidence for effect modification (interaction p=0.01). Time since quitting was associated with lower inflammation and atherosclerosis (e.g. OR for hs-CRP>2mg/L of 0.91 [0.88-0.95] and OR for CAC>0 of 0.94 [0.90-0.97] for every 5-year interval of cessation).

Conclusion: These findings expand our understanding of the harmful effects of smoking and help explain the cardiovascular benefit of smoking cessation.

53. Epigenetic modifying therapy for the treatment of cardiac fibrosis and hypertrophy

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Aberrant myocardial remodelling characterised by fibrosis and hypertrophy is a key pathological feature of numerous cardiac pathologies, including ischemic heart disease and hypertensive heart disease, both conditions prefacing the onset of heart failure. Genetic mechanisms behind cardiac disease development and progression have been extensively studied, however the involvement of epigenetic mechanisms in such processes are relatively unknown. Epigenetic modifications occur at the DNA level and can impact gene expression without altering the genetic sequence. These physical modifications that can result in repression or up-regulation of gene expression, are modifiable and represent attractive therapeutic targets for heart disease. The primary aim of this study was to determine whether DNA methylation, a prominent epigenetic modification, was implicated in the development of cardiac fibrosis, and whether this disease could be modified with the DNA methylation inhibitor 5-azacytidine (5-aza). These studies were carried out using various disease-relevant models, namely, in vitro exposure of primary human cardiac fibroblasts to hypoxic environments, ex vivo human cardiac tissue samples, and an in vivo rat model of myocardial fibrosis and hypertrophy. Cellular and tissue hypoxia was associated with increased fibrosis as determined by quantifying gene and protein expression levels of collagen. The degree of fibrosis was related to increased levels of DNA methylation and the DNA methyltransferase enzymes (DNMTs) responsible for catalyzing the aberrant methylation of DNA. Anti-fibrotic effects were observed with in vitro targeting of DNA methylation, using both siRNA targeted down-regulation of DNMTs and the DNA methylation inhibitor 5-aza. Similarly findings were observed in vivo. Chronic intra-peritoneal administration of 5-aza (10mg/kg for 12 weeks, 3 doses per week) resulted in a significant reduction in cardiac fibrosis (picrosirius red staining and hydroxyproline assay), reduced myocyte hypertrophy (cross-sectional histological analysis of digitalised H&E stained tissue sections), and evidence of reduced left ventricular mass index (echocardiography). These effects occurred without effecting systolic blood pressure. These studies highlight the potential value of epigenetic modifying therapy for the treatment of diseases associated with cardiac fibrosis and hypertrophy. These novel and clinically important findings have lead to our current position which involves studying the impact of the DNA methylation inhibitor 5-aza on myocardial structure and function in humans. 5-aza is currently FDA approved for the treatment of myelodysplastic syndrome (MDS) and we are in the process of embarking on a clinical observational study in August 2014 to study the myocardial response to 5-aza therapy in MDS patients. This will generate supportive human data that will build a case for a first in man for cardiac indication trial with 5-aza therapy.

54. Comparison of lesion level decision making in the cath lab using hyperemic and non-hyperemic pressure wire derived indices of stenosis severity: The VERIFY-2 Study

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Introduction:

Instantaneous Wave-Free Ratio (iFR) is an 'adenosine-free' index of coronary stenosis severity. The VERIFY and RESOLVE studies confirmed that iFR and resting Pd/Pa have a similar diagnostic accuracy of around 80% when compared to Fractional Flow Reserve (FFR). The ADVISE II investigators (TCT 2013) reported that a hybrid iFR-FFR strategy correctly classified over 94% of cases when compared to a strategy of measuring FFR in all lesions and avoided the need to administer adenosine in 2/3 of patients. This strategy will be employed to guide revascularisation in the SYNTAX II study. In the current study, we have compared the diagnostic performance of hybrid strategies utilising either iFR or resting Pd/Pa. We have also assessed lesion level decision making utilising a binary cut-off value of iFR as will be employed in the DEFINE-FLAIR trial and compared this to a binary cut-off for resting Pd/Pa.

Methods: We conducted a prospective study in 97 near consecutive patients (September 2013 - March 2014) who had 120 coronary artery stenoses of moderate angiographic severity and indeterminate physiological significance. Each of these patients had chest pain with standard clinical indications for coronary angiography and gave informed written consent. We excluded lesions with tortuous anatomy and heavy calcification. Following diagnostic angiography, the Volcano Prestige Wire (Volcano Corp., Rancho Cordova, CA) was inserted into the guide catheter, calibrated and passed to the distal third of the coronary artery beyond the lesion of interest. Intracoronary glyceryl trinitrate (200mcg) was given in all cases. Thereafter resting Pd/Pa and iFR (iFR® Modality, VOLCANO). were recorded. A continuous intravenous infusion of adenosine (140mcg/kg/min) was commenced and during conditions of stable maximal hyperaemia FFR was measured. Patient demographic and risk factor data was collected. Statistical analysis was performed using Minitab (Minitab Inc, Version 16.2.4) and SPSS Statistics (Release 17.0.0). Statistical tests used are indicated in the text. Unless indicated descriptive data are presented as mean±SD.

Results: 120 arteries were assessed in 97 patients; 62% were male, 62% had hypertension; 61% had hypercholesterolaemia; 29% were smokers; 14% had diabetes mellitus and 66% gave a family history of ischaemic heart disease. The lesions studied were in the left anterior descending (58%), left circumflex (15%), right coronary (19%), left main stem (4%) and obtuse marginal or diagonal branches (4%). Mean Pd/Pa was 0.93±0.06,mean iFR was 0.90±0.08 and the steady state FFR was 0.82±0.09. In order to assess concordance between hybrid iFR-FFR and Pd/Pa-FFR decision making strategies we compared lesion classification using the ADVISE II iFR adenosine zone (0.86-0.93) and a Pd/Pa adenosine zone based on the previous literature of 0.87-0.94. There were 69 lesions outwith the adenosine zone in the hybrid iFR group and 64 lesions outwith the adenosine zone in the hybrid Pd/Pa group.

Of 23 lesions with iFR <0.86, 21 concurred with FFR (≤0.8) and 2 were discordant. Of 46 lesions with iFR >0.93, 41 concurred with FFR (>0.8) and 5 were discordant. All 12 lesions with Pd/Pa <0.87 concurred with FFR (≤0.8). Of 52 lesions with Pd/Pa >0.94, 48 concurred with FFR (>0.8) and 4 were discordant. Overall misclassification with the hybrid iFR-FFR strategy was 10.1% compared to 6.3% with the hybrid Pd/Pa-FFR strategy (Chi-Square = 0.66, DF = 1, p = 0.42). The DEFINE FLAIR trial will use a binary iFR cut-off value of <0.9. The sensitivity analyses for an iFR cut-off of <0.9 and a Pd/Pa cut-off of <0.92 to define a functionally significant stenosis (n=120) are shown in the Table.

Based on this analysis, an iFR cut-off of 0.9 would result in inappropriate PCI in 8.3% of lesions and incomplete revascularisation in a further 10%. Using Pd/Pa with a cut-off of 0.92 would lead to inappropriate PCI in 4.2% of lesions and incomplete revascularisation in a further 10.8%. Overall, 13 (48%) lesions were misclassified by both iFR and Pd/Pa, 9 (33%) by iFR alone and 5 (19%) by Pd/Pa alone.

Figure 1 shows the ROC analyses for iFR vs. Pd/Pa with an FFR cut-off of ≤0.8. AUC for Pd/Pa 0.889 (95% CI - 0.82, 0.958). AUC for iFR 0.873 (95% CI – 0.805, 0.941)

Figure 1 – Receiver operator curves comparing Pd/Pa and iFR using an FFR≤0.8 cut-off

Figure 2 shows the ROC curves using a cut-off FFR of <0.75. AUC for Pd/Pa 0.946 (95% CI 0.899, 0.993). AUC for iFR 0.936 (95% CI 0.886, 0.986).

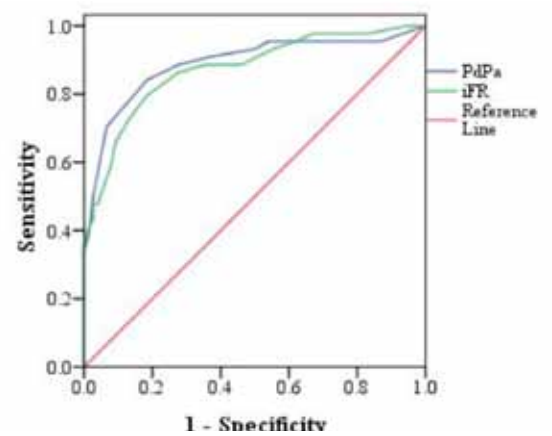
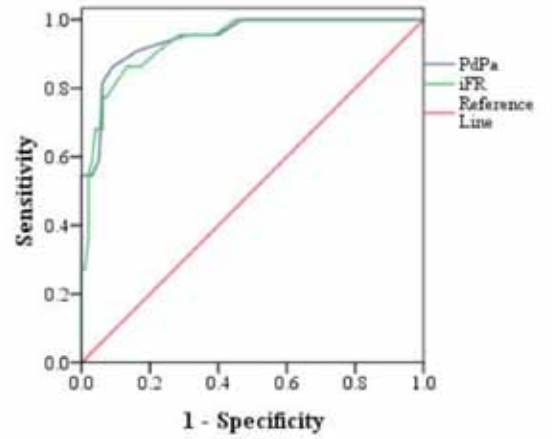


Figure 2 – Receiver operator curves comparing Pd/Pa and iFR using an FFR<0.75 cut-off

Discussion: VERIFY-2 confirms that hybrid decision making strategies utilising either Pd/Pa-FFR or iFR-FFR provide similar levels of misclassification compared to using FFR in all lesions. Using binary cut-off values, iFR results in a higher number of misclassified



lesions compared to Pd/Pa. Overall, based on ROC analysis, Pd/Pa performed better than iFR, with greater AUC values using either FFR ≤ 0.75 or FFR ≤ 0.8 as the gold standard. Whether used in a hybrid or binary algorithm neither resting index is sufficiently accurate to guide lesion level decisions on the need for revascularisation.

55. Effect of a polyphenol-rich diet on vascular function and other markers of cardiovascular risk

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Introduction: Observational evidence indicates that polyphenol-rich foods, in particular berries and dark chocolate, have the potential to influence cardiovascular disease (CVD) risk. There are few polyphenol dietary intervention studies of sufficiently robust design that assess the effect of polyphenol-rich foods on a range of cardiovascular endpoints in hypertensive patients. The aim of this study was to investigate the effect of increasing overall polyphenol dietary intake on microvascular function and other markers of cardiovascular risk in hypertensive participants.
Methods: All participants commenced with a 4-week run-in phase, during which they were asked to exclude berries and dark chocolate and consume <2 portions of F&V. Subjects were then randomised to continue with the low polyphenol diet for a further 8 weeks, or to consume a high polyphenol diet of 6 portions fruit and vegetables (F&V) (including one portion of berries/day) and 50g of dark chocolate. Endothelium-dependent and independent vasodilator responses were assessed by venous occlusion plethysmography. Compliance was assessed with 4-day food diaries and biochemical markers including vitamin C, carotenoids and epicatechin. Other measures of cardiovascular risk included systolic blood pressure (SBP), lipid profile, hsCRP, PAI-1 and heart rate variability.
Results: A total of 99 volunteers completed the study, 6 were excluded from analysis due to elevated hsCRP. Between group comparison of maximum % response to acetylcholine (Ach) was significantly improved in the high polyphenol group (p=0.02). Results were re-analysed with polyphenol-rich foods as a continuous variable, which revealed an absolute increase in the maximum response to Ach of 14.0% (p=0.008) with an extra daily portion of F&V, and 112.5% (p=0.020) with an extra daily portion of dark chocolate. There was no significant between group change in response to sodium nitroprusside. There was a strong trend in favour of a reduction in SBP (p=0.059), as well as a significant decrease in total cholesterol (p=0.042), in the high polyphenol group. PAI-1 and hsCRP did not improve with a polyphenol-rich diet, though there was a significant decrease in hsCRP in the low polyphenol group (p=0.026). There was a significant increase in the high polyphenol group on between group comparison of vitamin C (p<0.001), carotenoids (p<0.001 for all except lycopene, p=0.098) and epicatechin (p=0.008), indicating good dietary compliance. No significant improvement was found in markers of heart rate variability.
Conclusions: This work has shown that polyphenol-rich foods can effect a significant improvement in endothelium-dependent vasodilation following an 8-week intervention in hypertensive participants. These findings suggest that a well-tolerated, simple lifestyle modification can have a significant positive effect on markers of cardiovascular risk.

Session: Heart Failure

56. The role of doxycycline in asymptomatic left ventricular diastolic dysfunction

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Background: Matrix metalloproteinases (MMP)-2, MMP-9 and immune-inflammatory markers are involved in myocardial remodeling and may lead to the invasion of inflammatory cells in the myocardium contributing to left ventricular diastolic dysfunction (LVDD). Doxycycline is a MMP inhibitor and is clinically well-tolerated. We aimed to investigate the long-term effects of doxycycline on circulatory MMP, immune-inflammatory markers and cardiac structural changes in patients with asymptomatic LVDD (ALVDD).
Methods: The impact of doxycycline at pharmacologically relevant (10 μM) and supra-pharmacological concentrations (50, 150 μM) was evaluated on recombinant MMP activity, and MMP and immune-inflammatory marker released from tumor necrosis factor α-stimulated peripheral blood mononuclear cells (PBMC, n=3 donors). In a randomized clinical study, hypertensive patients with ALVDD (left atrial volume index ≥ 32 ml/m2, n=48) allocated to oral Doxycycline at 50-100 mg for 12 months or usual therapy (control) were assessed for changes in serum MMP, monocyte chemotaxis, monocyte MMP and immune-inflammatory marker release and gene expression. Cardiac structural changes were assessed by cardiac magnetic resonance imaging (CMR).
Results: Doxycycline directly inhibited recombinant MMP activity only at supra-pharmacological concentrations. Conversely, doxycycline inhibited expression levels of MMP-9 and immune-inflammatory markers (monocyte chemoattractant protein-1, interleukin (IL)1β, IL6 and IL10 released by stimulated healthy human PBMC at pharmacologically relevant concentrations. Consistent with these observations, chronic oral administration of doxycycline treatment over one year resulted in significant reductions of the primary endpoint, serum MMP-9 and markers of vascular function (IL8, IL10, vascular endothelial growth factor). Furthermore, doxycycline attenuated monocyte invasiveness and release of MMP-9 and IL12p70 without affecting MMP gene expression. CMR results are pending.
Conclusion: At conventional doses in patients with ALVDD, chronic doxycycline therapy was well-tolerated and reduced MMP levels, monocyte invasiveness, and monocyte production of MMP-9. CMR results will provide information on the impact of doxycycline on

cardiac structural changes.

57. Tetranectin, a potential novel biomarker of heart failure, is expressed within the myocardium and associates with cardiac fibrosis

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Purpose: Heart failure (HF) prevention strategies require biomarkers that predict disease manifestation. To help address this we adopted a proteomic screening approach (2D-DIGE and mass spectrometry) to dissect the coronary sinus serum proteome of asymptomatic hypertensive patients with low and high risk for future development of heart failure. Risk was based on B-type natriuretic peptide (BNP) levels. We identified several differentially expressed disease-associated serum proteins, one of which was tetranectin, whose precise function is yet to be defined but whose levels within the extracellular matrix increase during development and in disease whilst those within the circulation decline. The purpose of this study was to validate the proteomics discovery, quantify serum levels of tetranectin in a heart failure population, and to assess the disease relevance of this novel protein in cardiac tissue.
Methods: Two patient cohorts were used for this study which conformed to the principles of the Helsinki Declaration. Firstly, peripheral serum was collected from a validation cohort of asymptomatic hypertensive patients and patients with heart failure and samples were assayed for tetranectin by ELISA. Secondly, peripheral serum and myocardial tissue were procured during cardiothoracic surgery from 39 patients and used to analyse peripheral and tissue gene and protein expression of tetranectin and to compare them to fibrosis-related factors by QPCR and histological tissue staining.
Results: In the validation cohort, tetranectin was found to be significantly reduced in heart failure serum samples ($p<0.001$). In the second (tissue) cohort, low peripheral tetranectin correlated with high E/e, markers of collagen turnover, and tissue tetranectin gene expression. Myocardial tetranectin gene expression significantly correlated with collagen 1 ($r=0.50$, $p<0.01$), collagen 3 ($r=0.48$, $p<0.01$), MMP2 ($r=0.50$, $p<0.01$), and TIMP1 ($r=0.54$, $p<0.001$).
Conclusion: Using a proteomics approach, we identified tetranectin as a potential novel biomarker of heart failure. Furthermore, we demonstrated for the first time tetranectin expression within human cardiac tissue and found correlations of tetranection with the degree of tissue fibrosis observed. Further work to explore the potential role of tetranectin as a novel diagnostic and therapeutic for heart failure should be undertaken.

58. Identification of a circulating miRNA signature that can differentiate heart failure sub-classes

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Within Europe, heart failure (HF) has reached epidemic proportions affecting approximately 2% of the population, amounting to 15 million people. The disease has high co-morbidity and shortened life expectancy, with 5 year mortality of newly diagnosed HF as high as 50% in some studies. Effective management of HF is founded on an accurate diagnosis. Currently, this depends on clinical symptoms in combination with advanced and expensive imaging of cardiac function. Symptom based diagnostic challenges occur as co-morbidities of HF have similar presentations, and practical challenges relate to the majority of HF cases are found in the community setting where imaging equipment and expertise are not readily available. In addition, the ability to differentiate HF with preserved ejection fraction (HFpEF) versus reduced ejection fraction HF (HFrEF) is not possible without expensive imagining modalities. Having the ability to diagnose HF within the community and be able to differentiate between HFpEF and HFrEF would be of great clinical value as the management of these conditions differ greatly and patients could be more readily triaged while waiting for extensive clinical work up within the cardiology department in hospitals.
Therefore, the aim of this project was to identify a circulating biomarker that could be used to identify HF and help differentiate HFpEF and HFrEF. This study focused on the analysis microRNAs (miRNA) which comprise a class of small, noncoding RNAs that control expression of complementary target mRNAs. Dysregulation of intracellular miRNA expression has been described in various diseases, including a number of cardiovascular conditions, and the discovery of altered disease specific miRNA signatures could be used as novel diagnostic biomarker test.
A genome wide biomarker discovery miRNA analysis was initially carried out on 3 patient cohorts; no-HF; HFrEF; HFpEF, n=15 per group using Taqman Low Density miRNA Arrays. The top 5 miRNA candidates that showed potential as a HF diagnostic that could differentiate HFpEF and HFrEF were selected and further verified in the same patient population miRNA RT-PCR technology. Finally, the miRNA panel was then independently validated in a newly identified cohort consisting of 75 patients in each of the 3 groups. Current modelling based analysis with this unique data set has highlighted that miRNA combinations of 2 or 3 candidates has the ability to significantly distinguish HFpEF from HFrEF within a HF population (AUC >0.75, depending on model). Ongoing data analysis will likely improve the diagnostic efficiency of these newly identified miRNA biomarkers for HF.

59. The impact of natriuretic peptide-based screening and collaborative care on healthcare costs: an analysis of the STOP-HF study

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Background: The St. Vincent's Screening To Prevent Heart Failure (STOP-HF) study, a first-of-type, pragmatic, prospective trial showed that natriuretic peptide-based screening and collaborative care reduced the combined rate of left ventricular systolic dysfunction, diastolic dysfunction and heart failure as well as major adverse cardiac events (MACE). However, the impact of this intervention on costs of care is not known.
Methods: Complete cost-data were available in 1,055 participants with cardiovascular risk factors (median age 66.9 [IQR 58:73.3] years), recruited from 39 primary care practices between January 2005 and December 2009 and followed-up until December 2011. Cost-consequences and cost-effectiveness analyses were carried out per case prevented and per quality adjusted life year (QALY) free from MACE respectively. Costs were calculated from the perspective of the healthcare provider, using a mixture of micro-costing and casemix approaches, standardized to 2010 levels and discounted at a 5% rate.
Results: The primary endpoint of left ventricular dysfunction with or without heart failure was met in 52 of 522 (10.0%) control patients and 33 of 532 (6.2%) intervention patients (odds ratio [OR], 0.60; 95%CI, 0.38-0.94; P = .026). The incidence rate of MACE was 53.5 per 1000 patient-years in the control group vs 28.9 per 1000 patient-years in the intervention group (incidence rate ratio, 0.54; 95%CI, 0.40-0.73; P < .001). The base case cost-of-illness analyses demonstrated increased outpatient and primary care costs associated with the intervention, offset by cardiovascular hospitalization savings (emergency and elective). The incremental cost per case of LVD/HF prevented and was calculated as €3220 (sensitivity analyses based on 25% change in input costs range €-7540 to €12926). The incremental cost per MACE prevented was €1154 (sensitivity analyses range €-3190 to €5469). The cost per QALY was €1,346 and bootstrapping analyses showed that the intervention has a high probability of being cost-effective at a willingness to pay threshold of €30,000.
Conclusions: Among patients at risk for heart failure, natriuretic peptide-based screening and collaborative care reduced the combined rates of left ventricular systolic dysfunction, diastolic dysfunction and heart failure as well as MACE and is cost-effective. Increased outpatient and primary care costs associated with the intervention were offset by savings from reduced hospitalizations.

60. New heart failure diagnosis in the community results in a loss of one month of life per year over five years

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Purpose: This study reports on the demographics and prognosis of patients presenting with new onset heart failure in the community who are subsequently followed in a disease management program.
Methods: A review of patients referred to a rapid access heart failure diagnostic clinic between 2002 and 2012 was undertaken. Details of diagnosis, demographics, medical history, medications, investigations and mortality data were analysed. Cox proportional hazard models were carried out to test the relative risk of death in the HF-PEF and HF-REF groups compared to the non-HF group. Using data from the Central Statistics Office (CSO) on probability of death at each year of life, an age and gender matched simulated sample of equal size (N=733) was evaluated alongside the real data.
Results: A total of 733 patients were seen in Rapid Access Clinic for potential new cases of incident of heart failure. 38.9% (n=285) were diagnosed with heart failure, 40.7% (n=116) with HF-REF and 59.3% (n=169) with HF-PEF. 63.8% of HF patients were alive after 5 years resulting on average in a month per year loss of life expectancy over that period compared with aged matched population. Cox proportional hazard regression showed that a diagnosis of HF-PEF increases probability of death within 5 years almost two-fold on average compared to no heart failure (HR = 1.82 [1.24, 2.67]) p=.01. Risk with a diagnosis of HF-REF was higher (HR = 2.54 [1.72, 3.76]) p=.03. When adjusted stepwise for age, gender, valvular disease, diabetes, hypertension, chronic renal failure (CRF), chronic obstructive pulmonary disease, stroke/transient ischemic attack, cancer, AF, loop diuretic and BNP at baseline the HF-PEF hazard ratio is no longer statistically significant (HR = 1.48 [0.90, 2.44]), HF-REF remains significant but with a much reduced hazard ratio (HR=1.61 [1.05, 2.45]).
Conclusions: In this community-based cohort, the prognosis of heart failure was better than reported in previous studies. This is likely due to the impact of prompt diagnosis, the improvement in therapies and care within a disease management structure. After accounting for important covariates, relative risk of death is similar for both HF-PEF and HF-REF patients. Heart failure resulted in a month per year loss of life expectancy compared with an age-matched population.

61. Medication adherence in heart failure: is self-report as reliable as objective measures and is there a clinical impact

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Background: Heart failure (HF) treatment is based primarily on medication and non-adherence to therapy is well described. There are challenges to measuring adherence in clinical practice and a prospective relationship between non-adherence and outcome is infrequently reported. The study aimed to compare 3 adherence measures, to ascertain the optimal method of measuring adherence in HF and to establish if adherence, measured by any of these methods, is associated with improved outcomes.
Methods: This was a prospective study of stable HF patients. Adherence measures employed were the 4-item self-report Morisky Medication Adherence Scale (MMAS) and the medication possession ratio (MPR) using pharmacy records. Electronic monitoring of medication use was performed in a subset of patients using a MEMS

device. A patient was considered adherent where they had MMAS score=4; MPR≥85% or MEMS result≥85%. Spearman's correlation coefficient was calculated between measures. The primary endpoint was death, acute hospitalisation or unscheduled visit to the HF outpatient service (all-cause event). Cox proportional hazards method was used to adjust cohorts for age, sex and b-type natriuretic peptide in order to evaluate the relationship between adherence measured by MMAS and MPR and all-cause events.

Results: Data were available for 103 patients (average age 69.5±11.5 years, 75 [73%] male). Data for MEMS was available for 34 (33%) patients. A MMAS score of 4 was reported by 70 (68%) patients. Mean MMAS score was 3.6±0.6. Median MPR was 97% [97:100] and 80 (78%) patients were adherent by this measure. MEMS results were adherent in 28 (82%) patients. There were no significant differences between patients who reported adherence on the MMAS and those who reported non-adherence on this measure. Patients who were adherent on MPR were more likely to be prescribed a beta-blocker than those who were non-adherent on MPR (91.2% vs. 73.9%, p=0.027). The MMAS was weakly correlated with MPR (r=0.298) and MEMS (r=0.055). MPR and MEMS were weakly correlated (r=0.291). The primary endpoint occurred in 36 (35%) patients over a median follow-up period of 1.67 years [0.99:1.98]. Adherence measured by MPR was associated with a reduction in all-cause events in unadjusted (HR=0.48, 95%CI 0.24-0.97) and adjusted analysis (HR=0.36, 95%CI 0.17-0.76). There was no association between adherence assessed by MMAS and all-cause events in unadjusted or adjusted analysis.

Conclusions: The MMAS, a self-report adherence measure, identified a high rate of non-adherence in this HF population, however MMAS was not correlated with objective adherence measures, nor was it associated with outcome. Adherence assessed by the objective MPR measurement was associated with improved patient outcomes. Medication possession ratio may be the most appropriate measure for identifying clinically significant non-adherence in HF.

62. The ECG in the diagnosis of heart failure

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Purpose: The ECG is a fundamental part of the assessment of patients with suspected heart failure and has been suggested as part of a triage tool to help exclude heart failure if the ECG is normal. Although it is recognized that systolic dysfunction is unlikely with a normal ECG less is known about the nature of the ECG in HFPEF. A description of the pattern of ECG abnormalities in heart failure may also aid the development of education tools particularly for general practitioners.

Methods: This study analysed ECGs of patients referred by their general practitioners to a rapid access clinic for those with suspected heart failure between 2002 and 2012 12-lead ECG were interpreted by two cardiology research fellows. In cases of disagreement or uncertainty a third and deciding opinion was obtained from a staff cardiologist. An abnormal ECG was defined as evidence of myocardial infraction (acute or old), pacemaker rhythm, repolarisation abnormalities (ST segment and QT duration abnormality), voltage criteria for chamber hypertrophy, intraventicular conduction disorders, atrioventricular conduction disorders, clinically significant ventricular arrhythmia, clinically significant supraventricular rhythms and sinus arrest or block.

Results: A total of 733 patients were seen in Rapid Access Clinic for potential new cases of incident of heart failure. 38.9% (n=285) were diagnosed with heart failure, 40.7% (n=116) with HF-REF and 59.3% (n=169) with HF-PEF. The ECG was normal in 56.8% of those without heart failure and 14.1% of those with heart failure (12.2% HF-REF and 15.4% HF-PEF). The commonest abnormalities in HF in descending order were atrial fibrillation/flutter (47.5%), left axis deviation (19%), non specific ST abnormalities (16.7%), intraventricular conduction defect (16%) and evidence of old myocardial infarction (13.7%). 15 types of ECG classifications accounted for 98.8% of abnormalities identified. Atrial fibrillation was more common in HF-PEF compared to HF-REF (54.5% vs 37.4%) as was non specific ST changes (19.2% vs 13.1%).

Conclusion: The ECG is abnormal in the majority of cases of both HF-REF and HF-PEF. A relatively small number of ECG types account for the majority of abnormalities found which may help in the development of education programmes.

63. "False positive" screens using natriuretic peptide for stage b heart failure have equal risk for subsequent cardiovascular events; a report from the STOP-HF cohort

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Introduction: A noted criticism of the use of natriuretic peptide-based screening for Stage B heart failure has been the high frequency of so-called false positive (FP) results defined as no structural abnormality on echocardiography in the presence of an elevated NP level. Nonetheless, elevated NP in the community has been shown to be associated with cardiovascular risk. We therefore addressed the hypothesis that the FP patients in a NP screening strategy describe an at-risk cohort despite the reassuring echocardiogram.

Methods: From the St Vincents Screening to Prevent Heart Failure Study (STOP-HF) population, a total of 619 asymptomatic patients with standard risk factors for Stage B heart failure underwent echocardiographic and natriuretic peptide assessment (BNP). Patient groups were divided as follows: left ventricular systolic dysfunction (LVSD; ejection fraction (EF) <50%); left ventricular diastolic dysfunction (LVDD; left atrial volumetric index (LAVi) >34ml); isolated elevation in left ventricular mass index (eLVMI) (>132 gm/m^2 men, >109 gm/m^2 women); normal echocardiogram with elevated BNP (eBNP) (>50 pg/ml); normal echocardiogram with normal BNP (nBNP) (<50 pg/ml). Patients risk of major cardiovascular events (MACE; hospitalisation for arrhythmia, heart failure, TIA / CVA, myocardial infarction, pulmonary embolus) was assessed over a mean follow up period of 2.6yrs.

Results: In the study population, 5.65% (N=35) had LVSD, 12.44% (N=77) had LVDD, 6.14% (N=38) had eLVMI, 9.37% (N=58) had

eBNP and 66.4% (N=411) had nBNP. The period prevalence of at least 1 MACE for the five groups in the time studied was as follows: LVSD 11.4% (4/35); LVDD 9.1% (7/77); eLVMI 10.5% (4/38); eBNP 12.1% (7/58); nBNP 4.1% (17/411). For nBNP as a reference group (OR=1.00), the odds ratios for at least 1 MACE in the other four groups were: LVSD 2.99 (95% CI 0.95-9.43); LVDD 2.32 (95% CI 0.93-5.79); eLVMI 2.73 (95% CI 0.87-8.56); eBNP 3.18 (95% CI 1.26-8.04). After adjusting for age and gender, and again using the nBNP group as a reference (OR 1.00) the adjusted odds ratios for the other four groups were: LVSD 2.1 (95% CI 0.64-6.87); LVDD 1.66 (95% CI 0.63-4.34); eLVMI 2.83 (95% CI 0.87-9.22); eBNP 2.64 (95% CI 1.01-6.89).

Conclusion: Patients with no structural heart disease but with elevated levels of plasma brain natriuretic peptide are at similar risk of subsequent MACE events compared with those with established echocardiographic evidence of structural and/or functional abnormalities of the left ventricle. Therefore a False positive□ may be an inappropriate term when describing elevated BNP in these structurally normal hearts, with further investigation required to determine the optimal clinical approach to this group.

64. In an at risk population, increased naturetic peptide is the strongest predictor of incident of atrial fibrillation - a report from the STOP-HF cohort

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Introduction: In a population with standard risk factors predicting incident heart failure (HF) remains a major challenge, leaving too large a cohort for an effective prevention strategy. Thus, identifying those with additional phenotypic characteristics placing them at heightened risk of HF would allow resources to be focused on this cohort in an attempt to slow or prevent the development of HF.

Methods: This is a prospective study using the STOP-HF cohort which follows patients > 40years, with at least one standard risk factor for HF. Standard variables were obtained on an annual basis with new onset HF defined as emergency hospitalisation for HF with either reduced or preserved LVEF.

Results: From a total study population of 1540 participants, with an average follow-up of 3.7 years (median 4.2), 26 participants developed incident HF (rate 4.5/1,000 person-years). 16 of those were HF-PEF while 10 developed HF-REF. [MSOffice1] The median[IQR] age of onset was 72.7 [68.8:77.6] years. The incidence of HF did not differ by gender (1.43[F] vs. 1.98[M]%). See table of patient characteristics below.

Baseline	Non HF	HF
N	1514	26
Age median[IQR]	65.0 [57.6:71.4]	70.3 [66.5:74.4]
Male N(%)	692 (45.7%)	14 (53.8%)
LAVI median[IQR]	25.1 [21.1:30.6]	34.1 [29.9:47.5]
SBP median[IQR]	139 [125:152]	132 [127:159]
BNP median[IQR]	23 [11:46]	152 [77:227]
Pre-existing DM N(%)	461 (30.4%)	10 (38.5%)

On univariate analysis age, LAVI and BNP each [MSOffice2] predicted incident HF. On multivariate analysis, the only significant predictor of incident HF development remaining after stepwise regression was baseline BNP. Analysis of change in BNP over time prior to the development of HF did not demonstrate any specific change indicative of risk of developing HF

Conclusion

In summary prediction of new onset HF in an at-risk cohort remains imprecise after analysis of multiple relevant characteristics. BNP does independently indicate risk but change in NP does not further discriminate risk. Further work is needed to better characterize the high risk cohort to facilitate effective prevention strategies in the future.

65. AKI in the management of ADHF: comparison of HF-REF vs. HF-PEF

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Introduction: Acute kidney injury (AKI) is a frequent therapeutic concern in patients hospitalised for management of acute decompensated heart failure (ADHF), with renal dysfunction having been shown to be a powerful independent predictor of poor outcomes in heart failure. We hypothesised that patients with HFPEF were more at risk of development of AKI than those with HFREF. We sought to determine the prevalence and predictors of AKI in patients with HFREF vs. HFPEF patients hospitalised for management of ADHF.

Methods: We studied consecutive patients hospitalized for ADHF in the St Vincent's University Hospital between December 2012 and December 2013. All patients were treated with diuretics and had echocardiography performed within 3 days of admission. HFREF was defined as an ejection fraction less than 45%, and HFPEF as an ejection fraction of 45% or greater with evidence of diastolic dysfunction. AKI was defined as ≥25% increase in creatinine from baseline on admission.

Result: 83 patients were admitted over a twelve-month period (34 patients had HF-PEF while 49 patients had HFREF). HFPEF was more prevalent in older, female patients (p=0.001 and p=0.02 respectively). In total, 14 patients developed AKI, 7 (21%) with HFPEF and 7 (14%) with HFREF. This greater prevalence of AKI in HF-PEF occurred despite receiving significantly less cumulative dose diuretics than the HFREF group (350mg vs. 480mg frusemide, p 0.007). There was no significant difference in admission renal profile

or discharge medication regimen between the groups (see table).
Conclusion: A substantial proportion of patients admitted with ADHF develop AKI. Furthermore, our data demonstrates a trend towards a higher frequency of AKI in HFPEF despite lower cumulative diuretic dose in this cohort supporting the view that close scrutiny of renal function is required when managing decompensation in this patient group.

	HFPEF	**HFREF**	
N	34	49	p value
Age mean(SD)	77.6 (9.1)	66.5 (12)	<.001
Male N(%)	11 (32.4%)	29 (59.2%)	0.029
Adm. Urea median[IQR]	6.8 [4.9:10.6]	7.7 [5.5:9.4]	0.377
Adm. Creatinine median[IQR]	86.5 [68.8:98.2]	97 [77:115]	0.182
Dsch. Urea median[IQR]	8.1 [5.7:10.6]	8 [6.4:10.2]	0.752
Dsch. Creatinine median[IQR]	93.5 [82:120]	100 [81.8:110]	0.922
Adm. Diuretics N(%)	11 (32.4%)	17 (34.7%)	0.989
Adm. ACEI N(%)	10 (29.4%)	13 (26.5%)	0.969
Adm. ARB N(%)	3 (8.8%)	5 (10.2%)	0.768
Dsch. Diuretics N(%)	34 (100%)	42 (85.7%)	0.057
Dsch. ACEI N(%)	17 (50%)	39 (79.6%)	0.01
Dsch. ARB N(%)	2 (5.9%)	5 (10.2%)	0.768
Cum. Dose Diuretics median[IQR]	350 [245:480]	480 [320:960]	0.011
Cum. Dose Diuretics (AKI only) median[IQR]	440 [280:480]	580 [365:990]	0.2
AKI N(%)	7 (21.9%)	7 (14.6%)	0.947

66. Comparison of clinical presenting features of patients admitted with right versus left predominant heart failure. A single large tertiary referral centre retrospective study

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Background: HF affects more than 10% of adults aged 70 years or older and is associated with significant morbidity, mortality and frequent hospital admissions. Research efforts mainly focus on left ventricular (LV) dysfunction, while the syndrome of right heart failure (RHF) is overlooked. The term RHF and left heart failure (LHF) are frequently used in day to day clinical practice to describe the cluster of clinical features that result from the dysfunction of either the right or the left ventricle. However, the prevalence and significance of predominantly right sided versus left sided heart failure in a cohort admitted with decompensated symptoms remains poorly described.
Aim: We aim to describe the prevalence of predominantly RHF in a cohort admitted for decompensated symptoms, and to assess for differences in clinical characteristics and length of stay (LOS) in those with predominantly RHF vs. LHF.
Methods/Results: 500 patients hospitalized for decompensated HF between January 2010 and January 2011 were identified. The health records of a subset of 126 patients admitted between January 2010 and March 2010 were retrospectively analyzed as part of the larger ongoing study. Based on signs and symptoms, a diagnosis of predominantly RHF or LHF was determined by a panel of heart failure experts according to current guidelines. The prevalence of RHF was 23% and LHF was 77%. RHF was associated with fatigue (72.0% vs. 33.3%, p=0.001), pre-syncope (32.1% vs. 9.38%, p=0.003), and abdominal discomfort (21.4% vs. 3.16%, p<0.001). LHF was associated with orthopnea (55.6% vs. 16.7%, P=0.001), PND (34.07% vs. 8.33%, p=0.013), and chest pain (48.45% vs. 20.69%, p=0.008). RHF patients had more hepatomegaly (15.3% vs. 2.13% p=0.006) and ascites (23.1% vs. 3.13%, p=0.001) while LHF patients more often had rales (51.9% vs. 81.4%, p=0.002) and pulmonary edema (50.0% vs. 91.4%, p<0.0001). Though not statistically significant, a trend toward a longer LOS (19 ± 27 vs. 16 ± 13, p=0.527) among those with RHF was observed.
Conclusions: More than 1 in 5 patients admitted with decompensated symptoms had predominantly RHF. This study demonstrates that, when compared systematically in a cohort admitted with decompensated symptoms, the clinical syndromes of predominantly right and left sided HF are in fact associated with distinct sets of presenting features. A non-significant trend toward a longer LOS among those with RHF exists. In ongoing work, we are assessing for differences in the frequency of HF readmissions and of time to re-admission among the two groups.

67. Heart rate awareness in patients with chronic stable heart failure. A multi-center observational study

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Aims: We assessed adherence to European Society of Cardiology heart rate guidelines in patients with chronic stable heart failure. We also investigated the percent of patients on target doses of rate controlling drugs.
Methods: Multicenter study involving 549 patients from 12 heart failure centers. Patients in sinus rhythm with stabilized heart failure treatment and without recent cardiac events were included. Resting heart rates, demographics, co-morbidities and heart failure therapies were recorded.
Results: Heart rates ≥70 bpm were noted in 176 (32.1%) patients with 117 (21.3%) having rates > 75bpm. Non-achievement of target heart rates were unrelated to age, gender or most cardiovascular risk factors. However, 42% of patients with diabetes (p<0.01), 56% of those with COPD (p<0.0001) and 46% of those with NYHA Class 3 (p< 0.05) did not achieve target heart rates.Fifty eight (11%) subjects were not on beta-blockers and 40 (69%) (p<0001) of these did not achieve target heart rates. Only 25% of those on beta-blockers were at target dose. However, dosage was unrelated to achieving

target heart rates. Dyspnea (34%) and hypotension (22%) were the commonest reasons for non-titration of beta-blockers. Ivabradine was used in 11% of patients with only 10% at target dosage.
Conclusion: This study highlights that a third of stabilized chronic heart failure patients have not reached recommended target heart rates. Respiratory problems, diabetes and marked dyspnea were associated with poorer rate control. Guideline unawareness, inadequate beta-blocker titration and under use of Ivabradine may prevent patients gaining the proven benefits of heart rate control.

68. Validation of the mice clinical prediction rule in a new diagnostic clinic for community based patients

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Purpose: The MICE clinical prediction rule aids in diagnosis of suspected heart failure utilising a model based on four clinical features (Male, history of myocardial Infarction, Crepitations, Edema). Concerns that have been raised regarding its use outside research settings. We sought to retrospectively evaluate the MICE rule in a rapid access clinic for the new diagnosis of heart failure.
Methods: This study evaluates the MICE rule in a prospectively collected dataset of patients referred to a clinic for the diagnosis of heart failure between 2002 and 2012. The rule was validated using area under the receiver operating characteristic curve (AUROC) both alone, in combination with ECG and in combination with BNP testing. It was also validated in both the HF-REF and HF-PEF subsets. We also quantified the most reliable cut-off levels of the BNP assay in this group
Results: A total of 733 patients were seen in the clinic for potential new cases of incident of heart failure. 38.9% (n=285) were diagnosed with heart failure, 40.7% (n=116) with HF-REF and 59.3% (n=169) with HF-PEF. AUROC for the MICE rule alone was 0.7, for the MICE rule and ECG it was 0.75 for the MICE rule combined with log[BNP] it was 0.89. For the MICE rule with BNP and ECG the AUROC was 0.91. The AUROC for log BNP alone was 0.86 with sensitivity and specificity of 0.8 when BNP =100pg/ml. A bnp of 70pg/ml has a sensitivity of 0.9 and specificity of 0.64 while a BNP of 200pg/ml has sensitivity of 0.6 and specificity of 0.9. No significant differences were found between HF-REF and HF-PEF in the validation of the rule
Conclusion: The MICE rule is a useful tool to aid the diagnosis of heart failure in the community and combined with BNP may help effectively triage those with suspected heart failure.

69. The impact of a heart failure service provided in PHB on patient's health related quality of life (HRQOL)

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Galway University Hospital (NUHG) and Portiuncula Hospital, Ballinasloe (PHB) have established a heart failure service that provides as a component, a nurse-led heart failure service in the community in addition to the traditional hospital-based care. The Heart Failure Team (HFT) includes a consultant cardiologist, doctors in training, local GPs, a Hospital-based Heart Failure Clinical Nurse Specialist, and a community based Heart Failure Nurse Specialist. Heart failure management is based on the European Society of Cardiology Heart Failure Guidelines. In this study we compared 17 heart failure patients attending PHB who avail of the HFT service (Intervention Group), with 17 HF patients undergoing standard care at Portiuncula hospital and not receiving any input from the HFT(Standard care Group). We used the Kansas City Cardiomyopathy Questionnaire (kccq) to assess each patient's Health Related Quality of Life (HRQoL). We also measured length of in hospital stay for each group in the 6-months preceding the conduct of this study. The median Overall Summary and Clinical Summary (measures of HRQoL) were 76.995 and 78.645 respectively for the intervention group, compared to 67.970 and 60.055 for the standard care group. The average length of in hospital stay was 1.71 days in the intervention group and 6.47 days in the standard care group.

The outcome of this study shows that Hospital/Community based heart failure service improves patients' quality of life and reduces length of in hospital stay. Therefore, the results suggest that patients currently receiving standard care should receive a combination of a hospital and community based heart failure service.

70. Patients with heart failure in the last 12 months of life - a primary care perspective

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Introduction: Heart Failure is a chronic progressive disease with reported high morbidity and mortality. data on management of patients in the community in the last year of life are lacking
Methods: A search of a practice electronic health record for deceased patients with a recorded diagnosis of heart failure between 2006 and 2013 was undertaken. Charts were reviewed for key parameters relating to their treatment in the 12 months prior to death.
Results: 47 patients were identified with a coded diagnosis of heart failure. The mean age of the patients at time of death was 80.7 years; and 40% were male. Patients died a mean of 4.8 years after the date of diagnosis. 45% had attended a specialist clinic and 40% had a diagnosis of hf-ref. 15% had been reviewed by the specialist clinic in the 12 months prior to death. 45% of patients died at home and 10% in a nursing home. cause of death was heart failure in 15% and other cardiovascular causes in 45%. There was a mean of 14 GP visits in the 12 months prior to death and a mean of 2.5 emergency hospitalizations in the year prior to death. Of those attending heart failure specialist services there was a mean of one visit in the last 12 months. The palliative care team was involved in 15% of cases (all

of these had a malignant cause of death). At the time of death 70% of patients were on a loop diuretic, 65% on an ace inhibitor or arb, 10% on an aldosterone antagonist, and 35% on a beta blocker. 50% were on digoxin and 10% on a nitrate. In relation to symptomatic care 20% received opioids, 5% received anti-emetics and 20% received benzodiazepines. 30% were on antidepressants.
Conclusion: A minority of patients died of progressive HF. In the last year of life, the GP is the main provider of care. Links between specialist services and the GP should be strengthened to ensure adequate care in the last year of life.

71. Evaluation of Ivabradine eligibility and prescription in chronic heart failure

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Abstract Body: Background: The most recent ESC guidelines on Heart Failure (2012) recommend Ivabradine for patients in sinus rhythm with left ventricular ejection fraction (LVEF) ≤ 35%, suboptimal heart rate (HR ≥70bpm) and persistent symptoms (New York Heart Association functional class II-IV) despite optimal conventional therapy, to reduce the risk of heart failure hospitalisations. The adoption of guideline recommended therapies is typically slow. Our study aimed to ascertain if our nurse-led heart failure clinic was complying with the recent ESC guidelines regarding the utilisation of Ivabradine.
Methods: A 12-month retrospective audit of consultations was collected from our nurse-led heart failure service. The data was analysed to ascertain what proportion of patients attending the heart failure clinic would be eligible for Ivabradine and what proportion of these were currently being treated with Ivabradine. Further analysis was carried out to establish if patient characteristics influenced the decision to initiate Ivabradine therapy.
Results: 292 patients attended the nurse-led clinic between April 2012 and March 2013. 23 patients (7.8%) were currently prescribed Ivabradine. Of the remaining 269 patients, 165 (61%) were in sinus rhythm (SR) while the remaining 104 (39%) were in persistent atrial fibrillation. Of the cohort of patients in SR 60 (36%) had a LVEF ≤ 35%, of whom 16 (10%) had a heart rate ≥70bpm despite optimal (or maximally tolerated) beta-blocker dose, or a contraindication to beta-blockade. Therefore of the 39 patients eligible for treatment with Ivabradine, 23 (59%) were currently prescribed Ivabradine with the remaining 16 (41%) suitable but not yet receiving the drug. There were no significant differences in age, gender, NYHA status, renal function or aetiology (ischaemic vs. non-ischaemic) between patients prescribed Ivabradine compared to those eligible but not prescribed the drug. However patients eligible for Ivabradine but not prescribed it had significantly higher serum NT-proBNP levels (6757 ± 4764 vs. 2209 ± 1368 pg/mL, p=0.048).
Conclusions: Despite the inclusion of Ivabradine in the latest ESC guidelines for heart failure management there remains a delay in its initiation in real world practice. This highlights the need for on-going education to improve guideline adherence and prescription rates.

72. Applying the ideal cardiovascular health metrics to couples: a cross-sectional study in primary care

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Background: The American Heart Association (AHA) devised definitions for poor, intermediate and ideal cardiovascular (CV) health based on 7 health metrics; smoking, BMI, physical activity, diet, blood pressure, cholesterol and glucose. There is little research on overall CV health among couples. Our aim was to examine concordance levels for CV health among couples using the AHA health metrics, and to investigate if the CV health of an individual is associated with that of their partner.
Methods: The Mitchelstown Study is a population based cohort study of middle-aged Irish adults. Potential couples were identified as 2 study participants living at the same address. This list was cross-referenced with self-reported marital status and telephone number in the electronic patient record. Information on the CV health metrics was collected using standardised methods. Participants were categorised as ideal, intermediate and poor for each of the metrics and for overall CV health. The 0-14 point CV health metrics score was compared within couples using linear regression.
Results: Of 2047 participants, 191 potential couples were identified. We excluded 6 sibling pairs, 1 divorced couple and 3 couples who self-reported being single. The analysis includes 181 couples. There were significant associations between partners for smoking, diet, blood pressure, cholesterol and glucose ($p<0.05$). No couple had ideal CV health (i.e. both partners with 7 ideal metrics). Most couples (n=127, 69%) were concordant for poor CV health. There was a significant relationship between partners for the CV health metrics score ($p<0.05$).
Conclusion: The majority of couples had poor CV health. Our results suggest that an individuals overall CV health status is associated with that of their partner. Therefore interventions targeting couples and families may offer an opportunity to optimise the effect of preventative strategies.

73. The relationship between thyroid dysfunction and advanced lipoprotein cholesterol subfractions: The very large database of lipids- thyroid substudy

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Context: The association between thyroid dysfunction and novel advanced lipoprotein cholesterol sub-fractions is poorly defined.
Objective: To determine whether thyroid-stimulating hormone (TSH) is associated with changes in cholesterol sub-fractions by interrogating a large clinical database, the Very Large Database of Lipids (VLDL).
Design: Cross-sectional convenience sample derived from VLDL.

Individuals underwent lipid testing between 2009 and 2011 for clinical purposes. Linear and logistic regression models were constructed to determine the independent association between TSH and lipoprotein sub-fractions of interest. TSH was normalized by log-transformation when modelled as a continuous exposure.

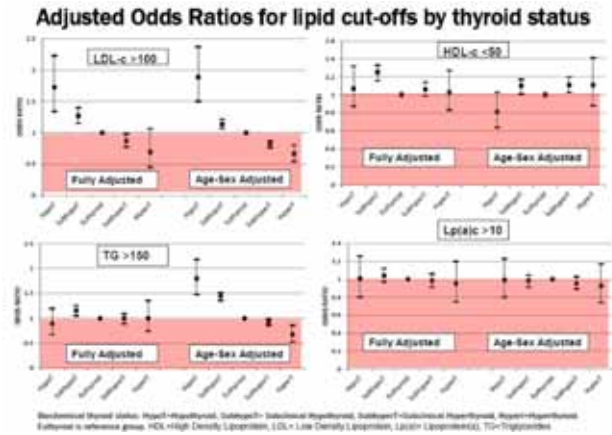
Setting: Outpatient community clinics. Approximately 30% were enrolled in a Medicare health plan and 60% were enrolled in a private sector health insurance plan.

Patients: We studied a sample of 117,012 US adults aged ≥18 years who had clinically driven synchronous testing of TSH (mIU/L), free-thyroxine (FT4, ng/dL), and lipoprotein cholesterol sub-fractions by Vertical Auto Profile ultracentrifugation.

Main Outcome Measure(s): We compared lipid sub-fraction outcomes based on biochemical thyroid status: (hyperthyroid [TSH ≤0.01mIU/L]; subclinical hyperthyroid [TSH 0.01 to <0.3mIU/L]; euthyroid [TSH 0.3-5.1mIU/L]; subclinical hypothyroid [TSH >5.1IU/L with FT4 ≥0.7]; and hypothyroid [TSH>5.1mIU/L with FT4 <0.7]).

Results: The distribution of TSH in this large study sample closely matched that of a 'normal' representative sample in NHANES III. 4502 (3.85%) and 4246 (3.63%) of VLDL subjects had values in the biochemical hypothyroid and hyperthyroid ranges, respectively. In adjusted models, LDL-C increased 2.2 mg/dL (95% CI, 1.7- 2.8, p<0.001), triglycerides increased 4.4 mg/dL (3.1- 5.7, p<0.001), and remnants increased 0.5 mg/dL (0.3-0.6, p<0.001) per log-unit increase in TSH. The reverse trend was found for hyperthyroid individuals. However, no appreciable change in HDL (0.04 [-0.16, 0.24) p=0.7) or lipoprotein (a) cholesterol (-0.07 [-0.15, 0.01] p=0.07) was found by change in log-TSH. Of note, increasing TSH was associated with increased HDL-C-2 sub-fraction but decreased HDL-3 sub-fraction. We found similar trends for categories of thyroid status.

Conclusions: Despite prior data, the association of thyroid dysfunction with HDL-c and Lipoprotein(a)-c do not appear to be clinically meaningful. The lack of a consistent association between thyroid function and HDL may be due to differential trends in HDL-subfractions (HDL-2 and HDL-3). While we confirm that thyroid dysfunction is associated with abnormalities in LDL-cholesterol and triglycerides, our data suggest that the impact of thyroid disease on lipoprotein levels in not very strong.



Study Registration NCT01698489

74. Associations and outcomes of cardiovascular implantable electronic device infections in a tertiary referral centre

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Introduction: Permanent pacemaker infections have been recognised since the early 1970`s1. Cardiac implantable electronic device (CIED) infections are associated with significant morbidity and mortality in addition to substantial healthcare costs2. An analysis of sixteen year trends in pacemaker and ICD infections in the United States demonstrated an average annual increase of 4.7% with an overall increase of 96% from 1993 to 20083. Possible reasons for this increase include the implantation of more complex devices and increasing patient co-morbidity3. The aim of this study was to determine the causative organisms, clinical course and mortality of CIED infections in a tertiary referral centre over a three and a half year period.

Methods: Patients with CIED infections were identified from the electronic device database and hospital discharge coding. Pacemaker (PM), implantable cardioverter defibrillators (ICD) and cardiac resynchronisation devices (CRT) were implanted in the Royal Victoria Hospital (RVH) or referred to the RVH for management of device infection. Data was collected from the device database, electronic care record and laboratory records. Patients were excluded if the diagnosis of CIED was only suspected or there was another possible source of infection. Retrospective analysis was undertaken of cases identified between July 2010 and January 2014.

Results: Forty- three cases of CIED infection were identified. Eight patients were female and the average age at diagnosis of CIED infection was 67 years. The mean time from the most recent device intervention until admission with CIED infection was 465 days with a median of 165 days (range 0 - 2372). Device type is described in

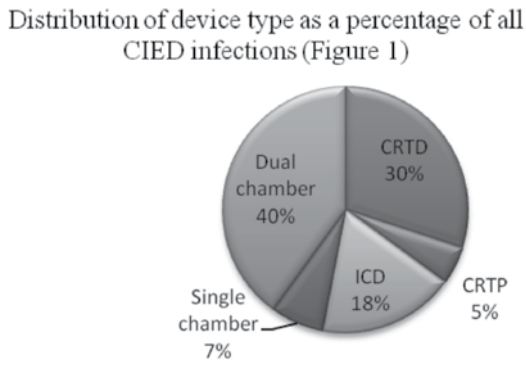

Figure 1.

Sixty five percent of patients had at least one previous revision (including box change). The incidence of revisions and other recognised risk factors are described in Table 1.

Number of Revisions	Percentage of patients (%)
0 1 2 3 4	35 39 12 12 2
Inter-hospital transfer	21
Diabetes	30
Age >75	40
Oral corticosteroids	7
Duration of procedure >60 mins	42

In five patients no organism was cultured.

The class and frequency of organism identified is described in Table 2. Thirty-three percent had echocardiographic evidence of lead endocarditis

The average duration of antibiotic treatment was 32 days. Thirteen patients died during follow-up, three deaths were directly related to CIED infection.

Organism	No. of patients lead culture +ve	No. of patients blood culture +ve
Staphylococcus aureus	15	5
Staphylococcus epidermis	9	2
Methicillin resistant staph aureus	4	1
Staphylococcus capitis	4	2
Serratia Marsescens	2	0
Staphlococcus hominis	2	0
Staphylococcus haemolyticus	2	0
Stenotrophomonas maltophilia	1	0
Streptococcus Mutans	1	0
Streptococcus salivarius	1	1
Klebsiella Oxytoca	1	0
Bacillus	1	1
Enterococcus	1	1
Corynebacterium amycolatum	1	0
Escherichia coli	1	0
Micrococcus	1	0
Staphylococcus auricularis	1	0

Conclusion: Forty three cases of CIED infections were identified between July 2010 and January 2014. There was a considerable range in time to presentation from the most recent device intervention. Previous studies demonstrated in-hospital mortality of 7-8% in line with a 7% mortality in this study4,5. A wide range of organisms were cultured however the staphylococcal species was found to be most prevalent as with most reported series.6 A third of patients had evidence of lead endocarditis. CIED infections are associated with significant morbidity and mortality with substantial healthcare costs. Local factors contributing to device infection choice merit further investigation. A prospective audit would be useful to address this issue.

75. Can you die from obstructive sleep apnoea syndrome (OSAS)?

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Purpose: Conservative estimates suggest 2-4% of the

population suffer from Obstructive Sleep Apnoea Syndrome (OSAS). In Ireland, over 9,000 deaths annually are attributed to cardiovascular disease. Several recent studies have suggested an independent association between OSAS and cardiovascular death. In our experience this is not reflected in current death certification. We aim to highlight the lack of documentation of OSAS-related deaths in national certification despite adequate awareness of this association by doctors.

Methods: We contacted the Central Statistics Office (CSO) and obtained all relevant mention of OSAS on death certificates over a four year period. We surveyed 286 doctors including Cardiologists, Respiratory Physicians and Pathologists on their view of OSAS-related deaths. Data was obtained from four Continuous Positive Airway Pressure (CPAP) suppliers on numbers of deaths in OSAS patients prescribed CPAP per annum. This was used as a method to calculate known deaths with OSAS and compare with deaths with OSAS recorded on death certification. Results: 185 of 286 doctors responded to an email survey (65% response rate). Forty one per cent (75/185) believe OSAS can be a direct cause of death. Ninety six per cent (177/185) believe OSAS can be an indirect cause of death. Of those who had signed death certificates, 12% (22/185) had documented OSAS as a cause of death. CSO data from 2008-2011 revealed 2 deaths directly caused by OSAS, 21 deaths indirectly caused by OSAS and 56 deaths with OSAS mentioned as a contributory cause. Information obtained from four Irish CPAP suppliers revealed that over a three year period, 94 deaths were recorded.

Conclusion: Current death certification in Ireland rarely reflects the proven association between OSAS and cardiovascular death. This is at odds with expected epidemiological forecasts and contrary to an opinion poll from a random selection of doctors. This in turn minimises the importance of a very serious public health concern.

76. Hypertension Prevalence, Awareness, Treatment and Control. Should 24 hour Ambulatory Blood Pressure be the Tool of Choice?

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Background: Accurate measurement of blood pressure (BP) is essential for diagnosis and management of hypertension. Usually measurements are performed in a clinical setting. Ambulatory blood pressure monitoring (ABPM) provides information over a prolonged period and is superior for the prediction of clinical events. The aim of this paper is to examine the prevalence, awareness, treatment and control rates of hypertension in a population based sample and to examine how use of 24 hour ABPM impacts on these rates.

Methods: The Mitchelstown Cohort was established to examine cardiovascular health in a middle-aged Irish adult population based sample. All participants had their BP measured. The average of the second and third BP readings was defined as the study BP. All participants were invited to undergo 24 hour ABPM. Hypertension was defined using accepted thresholds or by current anti-hypertensive medication use. Participants were defined as aware of their hypertension if they self-reported a doctor diagnosis of hypertension, and as treated if they self-reported anti-hypertensive medication use. Control of hypertension was defined as being on anti-hypertensive medication with a measured BP below the normal threshold.

Results: Of 2047 participants, 1207 (response rate 59%), under-went 24 hour ABPM. We excluded 128 from the ABPM analysis because of incomplete data. The mean study BP was 130/80 mmHg. Based on the study BP, the prevalence of hypertension was 46% with an awareness rate of 60%, 62% were treated and 58% controlled. Using ABPM the mean daytime BP was 131/77 mmHg and the mean night-time BP was 111/62 mmHg. For those who underwent ABPM, the prevalence was 63%. The awareness rate was 55%, 54% were treated and 42% controlled. The classification of hypertension by study and ABPM measurements was discordant in 27% of cases. ABPM reclassified 16% from normotensive to hypertensive and 11% from hypertensive to normotensive.

Conclusions: Awareness, treatment and control rates of hypertension remain suboptimal. The routine use of ABPM in the diagnosis and management of hypertension may result in better decision making with respect to treatment initiation and titration.

77. Cardiac Syndrome X in Ireland : Incidence and Phenotype

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Introduction: Cardiac Syndrome X is the presence of typical angina pectoris with objective signs of myocardial ischaemia despite the absence of demonstrable coronary artery disease on invasive angiography. It is believed to be due to microvascular dysfunction. Despite a favourable prognosis in terms of mortality, the majority of CSX patients continue to experience symptoms for years after diagnosis. The incidence of this condition has not been greatly investigated worldwide and its incidence in Ireland is unknown. The objective of this study was to determine the incidence of CSX in Cork University Hospital (CUH) and to establish the phenotype of the typical Irish CSX patient.

Methods: We studied all patients undergoing coronary

angiography in CUH during regular working hours over a 3 month period. CSX was diagnosed if the patient complained of typical angina pectoris, had an electrically and symptomatically positive exercise stress test, had normal arteries on angiography and had no other evident cause of angina. This allowed us to estimate the incidence. Phenotyping required a longer recruitment period of 17 months to allow enrolment of a sufficient number of patients. The demographics, history, routine blood results and cardiac investigation reports were recorded and all patients completed standardised Seattle Angina Questionnaires (SAQ).

Results: Only 5 of 372 (1.3%) patients undergoing angiography to investigate chest pain during routine hours in CUH met the diagnostic criteria of CSX. None of these patients were given a discharge diagnosis of CSX and none received cardiology follow-up. A total of 17 CSX patients were identified over the extended enrolment period. They were a predominantly female cohort (88%) with a mean age of 59.2 ± 6.6 years. There was a high rate of co-existent dyslipidaemia (82%) and a higher-than-average prevalence of hypothyroidism (24%). Although they were significantly less functionally limited than patients with obstructive CAD, they had an equally substantial impairment in quality of life, as judged by their responses in the SAQ.

Conclusions: CSX was found to be a relatively infrequently encountered condition in a large Irish cardiology centre. It was most frequently seen in middle-aged women with dyslipidaemia and it significantly impacted on their quality of life. None of the CSX patients were diagnosed as such, highlighting the general lack of awareness or acceptance of this condition in Ireland. These patients require diagnosis and active cardiology follow-up in order to effectively manage their symptoms.

Session: Surgery / General Cardiology

78. Infective endocarditis: an eight year retrospective cohort analysis in an Irish tertiary referral centre

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Introduction: Infective endocarditis (IE) is characterised by the infiltration and propagation of pathogens from the endocardial surface of the heart. Demographics of both the patient groups suffering IE and the infectious pathogens causing infection have undergone an observed change due to industrialisation/ modernisation of population groups. The aims of this study were; to establish the through-put of patients with IE in an Irish tertiary referral centre, observe the aetiological agents causing IE in an Irish population and also establish the factors (if any) affecting outcome.

Methods: Retrospective Cohort Analysis was conducted of patients admitted to St James Hospital with a HIPE coding of IE over an eight year period (2005-2013). All patients were reviewed to ensure a new diagnosis by Modified Dukes Criteria (definite or probable diagnosis), and those not fulfilling the criteria (refuted diagnosis) were excluded. The particulars of each admission were recorded from the Electronic Patient Record and supplemented by paper hospital record where necessary.

Results: A total of 211 patients were included in the study, with a mean age of 51.9 (range 16-89). The ratio of men to women was observed as 2.8:1. The majority of patients had culture-positive IE (64%), with Staphylococcal species being the most common (28%) and with a Flucloxacillin-resistence rate of 40.6%. A significant number of patients were intravenous drug users (21.8%). Overall rate of inpatient mortality was 15%, and was unaffected by echo findings or presence of a previous valve prosthesis. Patients who underwent surgery for IE also exhibited similar inpatient mortality (16%). It was noted that the presence of Staph spp positive culture was associated with an increased rate of inpatient mortality (25%). Patients who satisfied Dukes' echo criterion for IE were noted to have a significantly longer inpatient stay (53 vs 25, p=0.00017) to those otherwise satisfying dukes criteria.

Discussion: The results of this review corellated with previous large multicentred cohorts wherein Staph Aureus has been shown to be the most prevalent pathogen implicated in IE. The rate of inpatient mortality was 15% across all groups except those with Staphylococcal positive blood cultures (25%). This represents an increasing trend of more severe cases of IE caused by Staph Aureus. The presence of vegitation on echo, though not affecting inpatient mortality, was associated with a significant prolongation of inpatient stay (25 vs 53 inpatient days). This demonstrates the importance of echocardiographic assessment of these patients, and the clinical significance of echocardiographic change due to IE.

Conclusion: The observed cohort suffering IE in St James Hospital has exhibited the same change in demographics as observed internationally over the last decade. Patients with Dukes-positive echo criteria were observed to require a longer inpatient stay, but with no increased mortality.

79. Euroaspire IV (european action on secondary prevention through intervention to reduce events): a comparison of Irish and European results

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AMNCH

Objective: EuroASPIRE lV was a study conducted across 24 European countries in 2012-2013. The objective was to

determine whether European guidelines on cardiovascular disease (CVD) prevention were being adhered to in patients with established coronary heart disease (CHD) and in individuals with high multi-factorial risk of CVD. This is an examination of the Irish results compared to the other 24 European countries which participated.

Method: Consecutive patients both men and women ≥18 years of age and <80 years at the time of identification of their first or recurrent diagnosis or treatment for CHD were identified from the coronary care registry. The data was collected following review of the medical records and patients were interviewed and examined at least six months post admission and retrospectively up to three years.

Results: Within Europe 13,586 medical records were obtained including 368 from Ireland. Smoking remains prevalent in most centres, especially in younger coronary patients. Smoking prevalence is similar among Irish and European participants (17% vs 16%) with 34% prevalence in those <50 years though Irish participants claimed a greater intention to quit smoking within the forthcoming 6 months (66% vs 50%). The prevalence of obesity in Ireland was 39% similar to results from Europe at 37.6% with central obesity at 55%. In Ireland 79% of patients admitted to low levels of physical activity (PA) with only 9% claiming to achieve high levels of PA. Cardiac rehabilitation attendance is similar between Ireland and Europe with an average attendance of 80%. Blood pressure (BP) control was better in the Irish participants with 51% achieving target goals of <130/80mmHg in comparison to 33% in Europe. However awareness of BP was poor in the Irish group compared to average European population (58% vs 87%). Although both total cholesterol and LDL cholesterol control was significantly better in Ireland 4.02 and 2.2mmol/L respectively, the new LDL target of 1.8mmol/L was difficult to achieve both in Ireland and throughout Europe. Awareness of cholesterol levels in Irish participants was better compared to European counterparts (74% vs 49%). Prevalence of diabetes is > 30% in both Ireland and Europe. In the non diabetic group, 17% of Irish participants has a fasting glucose >7mmol/L, higher than average European participants at 13%. Diabetic control in both Ireland and Europe is poor with 69% of Irish patients having HbA1C >6.5%. Glucose awareness in Irish participants is slightly better than European average (39% vs 50%).

Conclusion: The prevalence of uncontrolled CV risk factors remains high despite findings in previous EuroASPIRE studies. Detection, awareness and treatment of CV risk factors are required to avoid unnecessary disease burden and enhance patients quality of life. All coronary patients should be offered comprehensive multidisciplinary preventive cardiology programmes to reduce their total cardiovascular risk.

80. A Randomised Controlled Trial to Reduce Pre-Hospital Delay Time in Patients with Acute Coronary Syndrome

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Aims: To determine whether an educational intervention was effective in (1) reducing patient pre-hospital delay time and (2) promoting appropriate responses to symptoms in patients diagnosed with acute coronary syndrome (ACS).

Methods & Results: This was a multi-site parallel group randomised controlled trial (RCT). Eligible patients diagnosed with ACS and admitted across 5 emergency departments in Dublin were recruited to the study (N=1,944; control: 972, intervention: 972). On admission, median baseline pre-hospital delay times were not significantly different between the groups (intervention 3.95 hours versus control 4.27 hours, p=0.465). The control and intervention groups received usual in-hospital care. In addition, patients randomised to the intervention group were given a 30-minute individualised education session using motivational interviewing techniques. This was reinforced one month later by telephone. Of the 1944, 314 (16.2%) were readmitted with ACS symptoms; 177 (18.2%) and 137 (14.1%) of the intervention and control groups respectively. Pre-hospital delay times were again measured. Data were analysed using repeated measures ANCOVA on log-transformed delay time. Median delay time was significantly lower in the intervention compared to the controlled group (1.7 hours versus 7.1 hours; p=0.018). Appropriately, those in the intervention group reported their symptoms more promptly to another person (p=0.010) and fewer consulted a general physician (GP) (p=0.024). There was no significant difference in the use of ambulance (p=0.510) or nitrates (p=0.364) between the groups.

Conclusion: It is possible to reduce pre-hospital delay time in ACS but there is a need for renewed emphasis on the importance of ambulance use.

81. A multi-site prospective observational study on the feasibility of opportunistic screening for atrial fibrillation in General Practice in Ireland

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Background: Atrial fibrillation (AF) is a growing public health problem in Ireland. The TILDA study reports for the first time the prevalence of AF in Ireland is 5.3% in the over

65s and almost 11% in those aged over 80 years old. The North Dublin Population Stroke Study (NDPSS) identified AF in 31% of all incident stroke patients (n=568) of which 46% were newly diagnosed. In the most recent report of the HSE Stroke Register AF was diagnosed in 36% of all incident strokes. By 2026 with our aging population it is projected 44% of all strokes will be attributable to AF.

The risk of stroke associated with AF is reduced by up to 67% by anticoagulant prophylaxis (prevention treatment). However, despite evidence of substantial benefit, under-utilisation of anticoagulation remains very common. Population screening for AF in adults 65years and older in the general practice setting has been shown to be effective in the detection of new cases. The HSE Stroke Clinical Care Programme has prioritised screening for AF in the elderly as a programme objective. This is explored through a feasibility study of opportunistic screening in general practice. This study not only explores opportunistic screening for AF but also the patient pathway and process.

Study Design: A multi-site prospective observational screening programme in general practice

Subjects: Adults aged 65 years and over

Timeframe: 6 months (1 January 2014- 30 June 2014)

Aims and objectives: To evaluate the feasibility of opportunistic screening for AF in adults over 65 in general practice in Ireland. Furthermore to explore the care pathway and process of newly diagnosed AF patients.

Methods: An AF project team was convened as a subgroup of the HSE Stroke Clinical Care Programme. Two hospital sites were selected using a transparent validated scoring system: Galway University Hospital and Sligo Regional Hospital. Ninety-eight GP's were recruited with total population coverage of 184,978. Background population and prevalence data was collected from all recruited GPs. GPs were asked to feel the pulse of all adults attending their surgery over the age of 65 during the study period. A dataset is then returned to the project team using a standardised computer-based mediform.

Results: After 3 months of screening 5,546 patients were screened. 13.9% were identified as having irregular pulses. Of those with an irregular pulse (n=772), 79.4% (n=613) had a history of AF. 10.1% were identified with 'irregular pulse not AF' and 10.8% (n=83) were identified as newly diagnosed AF. More detailed analysis will be available at the end of the study period.

Conclusion: Opportunistic screening by pulse taking in general practice in Ireland is effective in detecting new cases of AF.

82. Cardiac Risk Factors and 6-Year Change in high-sensitivity Cardiac Troponin-T: The Atherosclerosis Risk in Communities Study

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Running Title: 6-Year Change in high-sensitivity Troponin-T

Objectives: We sought to characterize patterns and determinants of change in highly sensitive troponin-T (hs-cTNT) in an asymptomatic population over 6 years.

Approach and Results: We studied 8,571 ARIC Study participants, free of cardiovascular disease, who had hs-cTNT measured at two time points, 6 years apart (1990-1992 and 1996-1998). Hs-cTNT was categorized as: <5 ng/L, 5-13 ng/L, and ≥14 ng/L. We examined the association of baseline 10-year atherosclerotic cardiovascular (ASCVD) risk-score groups (<5%, 5-7.4%, ≥7.5%) and individual cardiac risk-factors with change across hs-cTNT categories using Poisson regression and with continuous change using linear regression. Mean age was 57 years and 43% were male. Mean 6-year hs-cTNT changes (SD) within ASCVD risk-score groups were; +1.24 (6.2) ng/L [<5%], +2.18 (5.6) ng/L [5-7.4%], and +2.71 (8.7) ng/L [≥7.5%]. Major baseline determinants of hs-cTNT change were; age, male gender, hypertension, diabetes, and body-mass index (BMI). In addition, the relative risk (RR) of incident hs-cTNT ≥14 ng/L was 1.64 (95% CI 1.2-2.2) for persons with sustained elevations in systolic blood pressure compared to persons with BP<120/80 throughout the 6 year follow-up. Results for sustained obesity were similar (RR 1.65 [95% CI 1.2-2.3]). After accounting for survival bias, smoking emerged as a determinant of hs-cTNT change. Adverse lipid parameters were not associated with hs-cTNT increases.

Conclusions: Cardiovascular risk was associated with progression of subclinical myocardial injury. The modifiable risk-factors primarily driving this association were diabetes, hypertension, and obesity. Studies are needed to determine whether modifying these risk factors can prevent progression of subclinical myocardial injury.

83. Impact of genetic variation in the 5-HT transporter and receptor on platelet function in patients with stable CAD taking aspirin

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Background: Serotonin (5-HT) induces platelet aggregation by activating its 5-HT2A receptor. Platelet uptake is mediated by the 5-HT transporter (5-HTT). A common 5-HTT promoter (5-HTTLPR) splice variant results in long (L) and short (S) alleles. 5-HTTLPR genotype has been associated with increased platelet activation and risk of MI. Variation within HTR2A gene (C1354T) that encodes the 5-HT2Areceptor has also been associated with enhanced platelet aggregation. We hypothesised that 5-HTT and/or HTR2A variation may influence platelet response to aspirin in patients with stable CAD.

Methods: Patients (n=144) with stable cardiovascular disease taking aspirin were genotyped for the 5-HTTLPR and HTR2A variants. Platelet inhibition was assessed by serum thromboxane and arachidonic acid-induced platelet aggregation assay.

Results: 5-HTT genotype (LL vs *S) was a significant determinant of serum TX level (8.9+/-2.6 vs 6.0+/- 1.6 respectively; $p<0.02$) and 5-HTT LL genotype predicted an incomplete aspirin response (serum TXB2>2.2ng/ml) (p=0.04; OR=2.22, CI=1.03-4.79). Odds ratio for the effect of LL genotype on TX elevation was 3.8 (95% CI 1.2-11.6) in younger patients (<64yrs) compared to 1.0 (95% CI=0.3-3.8) in older subjects. LL genotype did not influence AA aggregation (p=0.83, OR= 1.2, CI=0.3-4.1). The HTR2A variant had no effect on TX generation (p=0.70; OR=1.22, CI=0.45-3.26) nor AA aggregation (p=0.99; OR=1.0, CI=0.2-4.9).

Conclusions: In younger patients with stable CAD 5HTT LL genotype carried by almost one third of our cohort is associated with a diminished response to aspirin that may increase cardiovascular risk. Genotypic variation inplatelet activation appears to be a contributing mechanism.

Constitution and Rules

CONSTITUTION

1. The Society shall be called "The Irish Cardiac Society". Its object shall be the advancement of knowledge of Disease of the Heart and Circulation.

2. These objects shall be pursued by meetings for communications and discussions, by lectures and by any other means.

3. The rules of the Society shall not be changed unless at the Annual General Meeting two-thirds of the Ordinary Members present vote in favour of the change. Notice of the suggested change must be sent to the Secretary, who shall notify all Ordinary Members of the proposal at least one month before the meeting.

4. There shall be a President of the Society. He shall be elected for two years. He will represent the Society at home and abroad and will preside over meetings of the Council but not necessarily at the Scientific Meeting of the Society for which a local Chairman may be elected.

MEMBERSHIP

5. The Society shall consist of Ordinary and Extraordinary Members. They shall be elected at the Annual General Meeting by an affirmative vote of two-thirds of the Ordinary Members present at the Meeting. The Annual subscription will be determined at the Annual General Meeting.

ORDINARY MEMBERS

6. Ordinary Members shall be Physicians or Surgeons on the Consultant Staff of a Hospital or others whose primary interest is in the practice of Cardiology, Cardiovascular Surgery, or in research in these and allied subjects.

7. They shall be elected at the Annual General Meeting by an affirmative vote of two-thirds of the Ordinary Members present at the Meeting. Every Ordinary Member is required to pay the annual subscription to the Society. A member who fails to pay the annual subscription on tow consecutive years will be deemed to have resigned from the Society.

8. New Members are proposed and seconded by current Members of the Society. A current Curriculum Vita must accompany the proposal for Membership.

EXTRAORDINARY MEMBERS

9. A Member will cease to be an Ordinary Member at the end of the academic year in which he reaches his sixty-fifth birthday. He shall automatically thereafter become an Extraordinary Member unless he should elect to retire from the Society.

10. Extraordinary Members shall receive the notices, may attend the meetings of the Society, may take part in the proceedings and may propose candidates for ordinary membership. They shall have no vote in the conduct of private business otherwise.

HONORARY AND CORRESPONDING MEMBERS

11. Men or women of distinction in Medicine, at home or abroad, who have contributed to the advancement of Cardiology, may be recommended by the Council for election as Honorary Members.

ELECTION OF MEMBERS

12. Ordinary and Extraordinary Members may propose candidates for Ordinary membership and other categories of membership. Such proposals accompanied by a statement of the candidates professional status, public appointments and published works, shall be circulated to Members of Council by the Secretary before September 1st. The Council shall consider the names proposed and shall recommend the names of those thought most suitable. The list of names recommended shall be circulated to members by the Secretary at least one month before the Annual General Meeting.

13. The Society shall hold an Annual Meeting which will usually be held in conjunction with the Stokes Lecture and the Scientific Meeting. The Council may organize further meetings at its discretion.

14. The Chairman of each Meting shall be appointed by the Council.

15. An Extra-Ordinary/Special Meeting can be called when circumstances demand, by three Officers of the Council or one third of the Ordinary Members of the Society.

16. Visitors may, with the permission of the Chairman, be introduced by members. They may make contributions and take part in discussions, subject to the same rules as members.

17. Communication shall be spoken, not read, and all speakers shall conform to the time-table arranged by the Council.

18. No reporters shall be permitted to be present and no report of the meetings shall be published in journals or newspapers unless sent by the Council.

ELECTION OF OFFICERS AND COUNCIL

19. Nominations of Ordinary Members for the post of president, Treasurer, Secretary, Assistant Secretary and for Members of the Council may be made by any Ordinary Member and sent in writing, with the consent of the nominee, to the Secretary before September 1st. In the normal course of events the Assistant Secretary will succeed the Secretary. The nominations shall be made at the Annual General Meeting and those names receiving the most votes shall be declared elected. In the event of a draw for any office, the Council shall decide the member to be elected.

20. The business of the Society shall be conducted by a Council which shall arrange the programme of each meeting. The Council shall consist of a President, Secretary, Assistant Secretary, Treasurer and three Ordinary Members. In addition the President-elect shall serve as a Council Member for the year before he takes Office and the immediate past-President shall be a Council Member for one year after he vacates Office. Each ordinary member of Council shall serve for a period of three years. The Council shall have power to co-opt one or two additional members for a period of up to three years, if they think there is any special reason for it.

21. The subscription for all categories of membership shall be fixed by the Council and shall become payable by the 1st day of January. Failure to pay the subscription due within two years shall be considered equivalent to resignation.

22. The account of the Society shall be submitted to the Society by the Council at each Annual General Meeting.

SECRETARIES AND TREASURER

23. Two Ordinary Members shall be elected in accordance with Rule 21 as Secretary and Treasurer respectively.

24. The Secretary, Assistant Secretary and Treasurer of the Society shall be appointed for a period of two years initially. A member can serve only two consecutive terms in each of these posts. To facilitate a smooth transition the post of Secretary should be generally filled by the outgoing Assistant Secretary.

25. The Secretary shall summon all meetings, circulate the programme to members at least one month before the meeting and be responsible in co-operation with the Chairman Elect for arranging the Annual General Meeting on behalf of the Council. The Secretary shall keep brief Minutes of the proceedings of the Society.

26. The Treasurer shall keep the accounts, collect subscriptions and be responsible for the expenditure of the Society.

PRESIDENTS OF THE IRISH CARDIAC SOCIETY

1949/50	P. T. O'Farrell
1951/52	L. Abrahamson
1953/54	L. K. Malley
1955/56	R. E. Steen
1957/58	J.A. Wallace
1959/60	B. Mayne
1961/62	O. Fitzgerald
1963/64	E. Flecher
1965/66	R. Mulcahy
1967/68	R. Baker
1969/70	T. Counihan
1971/72	M. Abrahamson
1973/74	R. Kernohan
1975/77	S. Blake
1978/79	C. Ward
1980/81	G Gearty
1982/83	D. MacBoyle
1984/85	J. Horgan
1986/87	M. Scott
1988/89	B. Maurer
1990/91	H. O Kane
1992/93	M. Walsh
1994/95	N. Campbell
1996/97	Wm Fennell
1998/99	C. Mulholland
2000/02	K. Daly
2003/04	MPS Varma
2005/06	P. Crean
2007/08	D. Higginson
2009/10	D. Sugrue
2011/12	C. Wilson
2013/14	D. Murray
2015/16	K. McDonald

There is no conflict of interest as the pharmaceutical companies do not have contact with the authors. All submissions by authors are free and they may submit more than one entry. The support for the meeting comes in terms of lease of venue; hotel expenses; meeting running costs and speaker expenses.

The ICS 2014 meeting is funded with the support from the following commercial bodies.

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