JOINT ANNUAL MEETING

ACTA - SCTS

2012

at The Manchester Central Conference Centre

Wednesday 18th - Friday 20th April 2012

Association for Cardiothoracic Anaesthetists

Society for Cardiothoracic Surgery in Great Britain and Ireland

www.acta.org.uk

www.scts.org

The Association of Cardiothoracic Anaesthetists and
The Society for Cardiothoracic Surgery in Great Britain and Ireland

2012 ANNUAL MEETING & CARDIOTHORACIC FORUM

18-20 April 2012
Manchester Central Conference Centre

Dr Donna Greenhalgh (2011-2012), Chairman, ACTA
Professor David Taggart (2010-2012), President, SCTS

Contents

Association of Cardiothoracic Anaesthetists

The Royal College of Anaesthetists,
Churchill House, 35 Red Lion Square,
London WC1R 4SG

Tel: +44 (0) 020 7092 1726
Fax: +44 (0) 20 7092 1730
Email: acta@rcoa.ac.uk

www.acta.org.uk

Society for Cardiothoracic Surgery in Great Britain and Ireland

The Royal College of Surgeons of England
35-43 Lincoln's Inn Fields
London WC2A 3PE

Tel: +44 (0) 20 7869 6893
Fax: +44 (0) 20 7869 6890
Email: sctsadmin@scts.org

www.scts.org

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International Guests

Dr Frank Detterbeck
Professor of Surgery (Section of Thoracic Surgery)
Chief Thoracic Surgery
Yale University, USA

Dr Jöerg Ender
Direktor
Abteilung für Anästhesiologie und Intensivmedizin II, Leipzig, Germany

Ms Jill Engel
Director of Advanced Practice for the Duke Heart Center at Duke University Hospital, Duke University Hospital, USA

Professor Luciano Gattinoni
Director of the School of Anesthesia and Intensive Care
University of Milan, Italy

Dr Dominic Grunenwald
Chief of Thoracic Surgery
Hospital Tenon, Paris

Mr Axel Hofmann
Health Economist
Medical Society for Blood Management, Laxenburg, Austria

Dr Jonathan Leff
Chief, Cardiothoracic Anesthesiology
Director Cardiothoracic Anesthesia Fellowship
Assistant Professor of Anesthesiology
Montefiore Medical Center, USA

Dr Constantive Mavroudis
Director
Congenital Heart Institute,
Walt Disney Pavilion,
Florida Hospital for Children, USA

Dr Al Perrino
Professor of Anesthesiology
Yale-New Haven Hospital, USA

Dr Marco Ranucci
Istituto Policlinico S.Donato, Milan, Italy

Dr Andrew Roscoe
Associate Professor of Anesthesiology
Toronto General Hospital, Canada

Dr Manfred Seeberger
Head of Cardiothoracic Anaesthesia
Department of Anaesthesia and Intensive Care Medicine
University of Basle, Anesthesia and Intensive Care Medicin, Switzerland

Dr Peter Slinger
Consultant Cardiothoracic Anaesthetist
Toronto General Hospital, Canada

Professor Mark Stafford-Smith MD
Department of Anesthesiology
Duke University Medical Center

Professor David Sugarbaker
Chief of Thoracic Surgery
Brigham & Women's Hospital,
Department of Thoracic Surgery,
Massachusetts, USA

Professor Thoralf Sundt III
Chief of Cardiac Surgery
Massachusetts General Hospital, USA

Dr Doris Taylor
Director Regenerative Medicine, Texas Heart Institute, USA

Professor Andrew Wechsler
Chair
Department of Cardiothoracic Surgery
Drexel University College of Medicine,
Philadelphia, USA

National Guests

Baroness Angela Billingham
of Banbury in the County of Oxfordshire.
Life Peer House of Lords, sits on the Labour benches

Dr Dominic Bell
Consultant Anaesthetist
Leeds General Infirmary

Ms Stevie Caffrey
Patient
University Hospitals of South Manchester

Ms Janet Davies FRCN
Director of Nursing & Service Delivery
Royal College of Nursing

Mr Stephen Dorrell MP
Health Minister, UK

Mr James Kingsland
National Commissioning Network Lead
Dept of Health and Senior Partner in General Practice, Chester

Mr Shishir Kore
Specialist Nurse, Organ Retrieval/Ventricular Assist Devise Coordinator, University Hospital of South Manchester

Professor Paul O'Neill
Consultant Geriatrician
University Hospital of South Manchester

Dr Thomas Matthew
Consultant Anaesthetist
Nottingham City Hospital, UK

Mr Tony Nash
Olympic Champion, Gold Medal Winner

Dame Gill Oliver FRCN
RCN Fellow

Dr Susannah Price
Consultant in Paediatric Cardiology & Intensive Care
Royal Brompton and Harefileed NHS Foundation Trust

Dr Saxon Ridley
Consultant Anaesthetist & Intensive Care Medicine
Glan Clywd Hospital

Mr David Soul
Actor & Musician
Patient
Royal Brompton Hospital

Manchester Central Hall Plan

Outline Programme

WEDNESDAY 18th April 2012

Time from	*Time to*	*Session*

SCTS UNIVERSITY

08:30	09:00	**Welcome**
09:00 14:00	12:00 17:00	**Lung Oncology: Contemporary Practice and Advances**
09:00 14:00	12:00 17:00	**Adult Right-Sided Heart Disease**
09:00 14:00	12:00 17:00	**Complex Mediastinal and Airway Surgery**
09:00 14:00	12:00 17:00	**Minimising Surgical Invasion: Innovative Techniques**
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09:00 14:00	12:00 17:00	**Simulation of Crisis Management in Thoracic Emergencies**
09:00 14:00	12:00 17:00	**Anticoagulation and Bleeding in Cardiac Surgery**
09:00 14:00	12:00 17:00	**Transcatheter Valve Surgery**

Lunch Box Sessions

12:15	13:45	**Cerebral Protection in Cardiac Surgery**
12:15	13:45	**How to do it: Complex Thoracic Surgical Resection**
12:15	13:45	**Complex Mitral Valve Disease**

Time trom	*Time to*	*Session*
12:15	13:45	**Complex Airway Disease / Mediastinal Management**
12:15	13:45	**Allografts in Congenital Heart Surgery**
12:15	13:45	**ECMO: Clinical Applications and Practical Tips**
12:15	13:45	**Bicuspid Aortic Valve Disease and Bicuspid Aortopathy**
12:15	13:45	**State of the Art Aortic Stenting**
12:15	13:45	**Mediastinitis: Prevention and Cure**

THURSDAY 19th April 2012

07:30	08:45	Charter 3	**SORIN - Aortic Valve**
07:30	08:45	Exchange 11	**Thoracic - Mets and Malignancy**
07:30	08:45	Exchange 10	**BIOINTEGRAL Congenital Symposium**
07:30	08:45	Exchange 9	**Cardiac Scientific**
07:30	08:45	Charter 2	**Thoracic - Lung Volume Reduction**
07:30	08:45	Organisers 1	**Education Sub Committee**
09:00	10:00	Charter 3	**Patients' Forum Greeting**
08:45	10:00	Exchange 6/7	**Database Managers : 7th Annual Meeting**
08:45	10:00	Exchange Auditorium	**CARDIOSOLUTIONS Opening Plenary Session - Teamwork and Outcomes**
10:00	10:45	Exhibition Hall	**COFFEE**
10:00	10:45	Organisers 3	**Thoracic Sub Committee**
10:45	12:30	Exchange 10	**Congenital Papers**
10:45	12:30	Exchange 11	**Safe Surgery Workshop**
10:45	12:30	Exchange 9	**Cardiac - TAVI**
10:45	12:30	Exchange 6/7	**Database Managers : 7th Annual Meeting**
10:45	12:30	Charter 3	**ETHICON Cardiothoracic Forum**
10:45	12:30	Exchange Auditorium	**HEART RESEARCH UK - Organ Protection**
10:45	12:30	Charter 2	**Fischer and Paykel Thoracic - Analgesia**
12:30	13:30	Exhibition Hall	**LUNCH**

13:30	15:00	Exchange 11	**Leader as Educator**
13:30	15:00	Exchange Auditorium	**Plenary Session - How do we provide the Out of Hours' Service?**
13:30	15:00	Charter 3	**Patients' and Cardiothoracic Forum**
13:30	15:00	Exchange 10	**Congenital**
13:30	17:30	Exchange 6/7	**Data Committee Meeting**
13:30	15:00	Exchange 9	**Organ Failure**
13:30	15:00	Charter 2	**MEDELA Thoracic Research Collaborative**
15:00	15:45	Charter 2	**Thoracic Films**
15:00	15:45	Exchange 4/5	**Cardiac Films - AV Repair and revasc**
15:00	15:45	Exhibition Hall	**TEA**
15:45	17:30	Exchange 11	**GE Echo Session**
15:45	17:30	Exchange 9	**Trainees Meeting**
15:45	17:30	Exchange 4/5	**Cardiac - Revascularisation**
15:45	17:30	Exchange 10	**Congenital Papers**
15:45	17:30	Exchange Auditorium	**Current Status of Artificial Organ Support**
15:45	17:30	Charter 3	**ETHICON Cardiothoracic Forum**
15:45	17:30	Charter 2	**Thoracic - Miscellaneous**
17:30	19:00	Charter 3	**SCTS - ABM**

FRIDAY 20th April 2012

08:00	10:00	Exchange 10	**Cardiac - Stopping the Bleeding**
08:00	09:00	Exchange 6/7	**Thoracic - Oesophageal**
09:10	10:00	Exchange 6/7	**Part 1 - Pushing the Boundaries**
08:00	10:00	Exchange 11	**Workshop - Getting the Best from your Unit**
08:00	10:00	Charter 2	**MEDELA: Thoracic - VATS and Limited Resections**
08:00	10:00	Exchange 9	**EDWARDS Mitral, Tricuspid and AF**
08:45	10:00	Charter 3	**Cardiothoracic Forum**
10:00	10:45	Exhibition Hall	**COFFEE**
10:00	10:45	Charter 2	**Thoracic Films**
10:00	10:45	Exchange 9	**Cardiac Films: Mitral x2 and Sarcoma**
10:45	12:30	Exchange 11	**Sleep Apnoea Session**
10:45	12:30	Charter 3	**ETHICON Cardiothoracic Forum**
10:45	11:55	Charter 2	**Thoracic - Tracheal Surgery**
10:45	12:30	Exchange Auditorium	**Cardiac - Pushing the Boundaries**
10:45	12:30	Exchange 10	**Thoracic - ICU**
10:45	11:55	Exchange 9	**Cardiac - Miscellaneous**
11:55	12:30	Charter 2	**LILLY Tudor Edwards Thoracic Lecture - Prof Sugarbaker**
11:55	12:30	Exchange 9	**Hunterian Lecture**
12:30	13:30	Exhibition Hall	**LUNCH**
12:30	13:30	Charter 2	**Thoracic Films**
12:30	13:30	Exchange 9	**Cardiac Films: AVR and Aortic**
12:30	13:30	Exchange 6/7	**Student Poster Presentations**
14:00	15:00	Exchange 6/7	**Exhibitors Meeting**
13:30	16:30	Exchange Auditorium	**Heart Failure**
13:30	16:30	Charter 3	**ETHICON Cardiothoracic Forum**
15:00	16:00	Organisers 1	**Scholarship Meeting**
13:30	16:30	Charter 2	**Thoracic - Recovery and Pre-op Assessment**
13:30	16:30	Exchange 9	**Cardiac - Aortic Surgery**
16:45	17:15	Organisers 1	**Presentation Meeting**

Main Meeting Programme

Wednesday, April 18, 2012

08:30 - 09:00 **SCTS / ACTA University: Welcome**
Level 1 Mr Ian Wilson

09:00 - 12:00 **SCTS / ACTA University:**
14:00 - 17:00 **Lung Oncology: Contemporary Practice and Advances**
Mr Ed Black / Professor David Sugarbaker / Professor Dominique Grunewald

09:00 - 12:00 **SCTS / ACTA University:**
14:00 - 17:00 **Adult Right-Sided Heart Disease: Often Forgotten but Can't be Ignored**
Mr Frank Wells / Professor Alain Combes / Professor Patrick Perier Professor Gebrine El Khoury

09:00 - 12:00 **SCTS / ACTA University:**
14:00 - 17:00 **Complex Mediastinal and Airway Surgery**
Mr Ian Hunt / Dr Andrew Roscoe / Mr Doug West / Professor Frank Detterbeck / Professor Peter Slinger / Professor Paul Van Schil

09:00 - 12:00 **SCTS / ACTA University:**
14:00 - 17:00 **Minimising Surgical Invasion: Innovative Techniques Offer Advances in Therapeutic Options**
Mr Joe Zacharias / Mr Bill Walker / Professor Borut Gersak / Professor Manuel Castella

09:00 - 12:00 **SCTS / ACTA University:**
14:00 - 17:00 **Coronary Artery Surgery Just Got Interesting: Understanding the Data**
Professor David Taggart / Dr Chris Palin / Professor Andy Wechsler / Professor Thoralf Sundt III

09:00 - 12:00 **SCTS / ACTA University:**
14:00 - 17:00 **Intraoperative TOE and Decision Making in Cardiac Surgery**
Dr Donna Greenhalgh / Dr Niall O'Keeffe

09:00 - 12:00 **SCTS / ACTA University:**
14:00 - 17:00 **Congenital Heart Surgery: Arrhythmia Surgery & Advanced Atrioventricular Valve Repair**
Mr Tim Jones / Mr Nihal Weerasena / Dr Constantine Mavroudis / Dr Barbara Deal / Dr Craig Bailey / Dr Sally Wilmhurst / Professor Manual Castella

09:00 - 12:00 **SCTS / ACTA University:**
14:00 - 17:00 **Simulation of Crisis Management in Thoracic Emergencies**
Mr Sri Rathinam / Mr Rajani Annamaneni / Mr Matt Molyneux / Mr Maninder Kalkat / The OneLung Group

09:00 - 12:00 **SCTS / ACTA University:**
14:00 - 17:00 **Anticoagulation and Bleeding in Cardiac Surgery: Optimal Management in Shifting Sands**
Mr Gavin Murphy / Dr Ravi Gill / Professor Davy Cheng

09:00 - 12:00 **SCTS / ACTA University:**
14:00 - 17:00 **Transcatheter Valve Surgery: A Rapidly Evolving Field**
Mr Uday Trivedi / Dr Andy Klein / Professor Michael Borger

Lunch Box Session

12:15 - 13:45 **Lunch Box Session:**
How to do it? Complex Thoracic Surgical Resection
Mr Ian Hunt / Professor David Sugarbaker

12:15 - 13:45 **Lunch Box Session:**
Cerebral Protection in Cardiac Surgery
Dr Sean Bennett / Dr Andy Klein

12:15 - 13:45 **Lunch Box Session:**
Complex Mitral Valve Disease:
Tackling Challenging Variants in Day-to-Day Clinical Practice
Mr Chris Blauth / Professor Patrick Perier / Mr Frank Wells

12:15 - 13:45 **Lunch Box Session:**
How to do it? Complex Airway Disease /
Mediastinal Tumour Management
Mr Ed Black / Professor Paul Van Schil / Dr David Breen

12:15 - 13:45 **Lunch Box Session:**
Allografts in Congenital Heart Surgery: The Present and The Future
Mr Tim Jones / Mr Andrew Parry / Professor Francisco Da Costa

12:15 - 13:45 **Lunch Box Session:**
Extra Corporeal Membrane Oxygenation: Clinical Applications and Practical Tips
Mr Richard Firmin /Professor Alain Combes

12:15 - 13:45 **Lunch Box Session:**
Bicuspid Aortic Valve Disease and Bicuspid Aortopathy
Mr Chris Young / Professor Thoralf Sundt III / Professor Gebrine El Khoury

12:15 - 13:45 **Lunch Box Session:**
State of the Art Aortic Stenting
Mr Manoj Kuduvalli / Mr Leon Hadjinikolaou / Mr Donald Adam

12:15 - 13:45 **Lunch Box Session:**
Mediastinitis: Contemporary Advances in Prevention and Cure
Mr Mo Bhabra

12:15-13:45 **Lunch Box Session:**
Lung Volume Reduction Surgery and Home at the Weekend:
Margaret Kornaszewska / Kostos Papagiannopoulos / Pallav Shah

17:00 - 19:00 **Welcome Reception**
Exhibition Hall Mr Chris Satur and the Staffordshire University Orchestra

19:30 - 23:00 **SCTS University Dinner**

19:30 - 23:00 **Trainees Dinner**

Thursday, April 19, 2012

07:30 - 08:45 **The Sorin Aortic Valve Session - Cardiac**
Charter 3 *Chair/s: Mr Stephen Billing, Mr Vipin Zamvar and Dr Mark Forrest*

001 07:30 **The Use and Impact of Transoesophageal Echocardiography in Aortic Valve Surgery - A Prospective, Multicentre Study**
P. Saravanan[1] A. Bendon[1] K.R. Vege[1] J. Hillier[2] R. Bateman[2] J. MacKay[3] B. Parizkova[3]
1 Lancashire Cardiac Centre, Victoria Hospital, United Kingdom; 2 Bristol Royal Infirmary, United Kingdom; 3 Papworth Hospital, United Kingdom

002 07:40 **Should Minimally Invasive Aortic Valve Surgery (MIAVR) be The Default Surgical Procedure for all First Time Aortic Valve Replacements?**
Rizwan Attia; J.C. Roxburgh; C.P. Young
Guy's and St Thomas' Hospital, United Kingdom

003 07:50 **Initial Experience of the Sutureless 'Percevals' Aortic Valve Replacement**
R. Ibe; K. Baig; A.O. Chukwuemeka
Department of Cardiothoracic Surgery, Imperial College London, United Kingdom

004 08:00 **Impact of Pre-Operative Symptoms on Outcome After Valve Sparing Surgery for Severe Aortic Insufficiency: Is it time to Re-Consider the Indications?**
Hunaid Vohra; R.N. Whistance; L. DeKerchove; D. Glineur; P. Noirhomme; G. ElKhoury
Saint Luc University Hospital, Belgium

005 08:10 **Redo Aortic Valve Replacement: The Sutureless Approach**
Giuseppe Santarpino; S. Pfeiffer; G. Concistré; T. Fischlein
Klinikum Nürnberg - Department of Cardiac Surgery, Germany

08:20 - 08:45 **The Future Directions of Aortic Valve Surgery**
Professor Thoralf Sundt III
Massachusetts General Hospital, USA

07:30 - 08:45 **Congenital Symposium** sponsored by BioIntegral Surgical Inc., Canada
Exchange 10 *Chair/s: Mr Andrew Parry and Dr Stefano Marianeschi*

A New Concept in the Surgical Treatment of ToF Using An Injectable Pulmonic Valve for Total Primary Repair.
Professor Piero Abbruzzese, Luca Deorsola, Enrico Aidala, Davide Marini, Gabriella Agnoletti ; Regina Margherita Paediatric Hospital, Turin

Infants and children under the age of 5 needing conduits for Tetralogy of Fallot repair may require a further 2 to 4 operations before adulthood. Using an injectable biological oversized valve squeezed to a diameter which is appropriate for age and chest dimensions promises longer freedom from reoperation. This symposium will present the initial results from 9 Primary ToF Repair cases performed at Regina Margherita Paediatric Hospital, Turin since Sep 2010 using the No-React(r) Injectable Pulmonic Valve. No problems occurred either during CPB weaning or thereafter. No major pulmonary insufficiency, either intra- or periprosthetic, was observed. Follow-up 2D echocardiograms have shown relatively fast growing Pulmonary Artery distal to the valve. No fibrin deposits and no evidence of distal pulmonary obstructions have been observed so far.

07:25 - 08:45 **Thoracic - Metastases and Malignancy**
Exchange 11 *Chair/s: Mr Pala Rajesh and Mr Simon Jordan*

006 07:25 **Pulmonary Metastasectomy for Bone and Soft Tissue Sarcoma: Published Five-Year Survival Compared with Thames Cancer Registry Data 1985-2004**
Tom Treasure[1] F. Fiorentino[2] M. Scarci[1] H. Moller[3] M. Utley[1]
1 Clinical Operational Research Unit UCL, United Kingdom; 2 Imperial College, United Kingdom; 3 KCL Thames Cancer Registry, United Kingdom

007 07:35 **Should we Operate on Patients with Colorectal Lung and Liver Metastases**
U.B. Naidu; R.G. Evans; J. Nandi; J. Kumara; P.B. Rajesh
1 Heart of England Hospital NHS Trust, United Kingdom

008 07:45 **The Determinants of Survival in Patients Undergoing Pulmonary Metastastectomy for Metastatic Sarcoma**
D. Eaton; K. Mujahid; M. Hawari; S. Vaiyapuri; L. Pabla; S. Trotter; M. Kalakat

Heartlands Hospital, United Kingdom

009 07:55 **The Impact of Modern Mediastinal Nodal Staging Modalities on the Frequency of Pathological N2 Disease in Patients Undergoing Surgery for Lung Cancer**
Johan Van der Merwe; M. Dusmet; A. Nicholson; S. Jordan; G. Ladas; E. Lim
Royal Brompton and Harefield NHS Trust, United Kingdom

010 08:05 **VATS Lobectomy Facilitates Delivery of Adjuvant Chemotherapy Following NSCLC Resection**
Udo Abah[1] D. Church[2] W. Saka[2] D. Talbot[2] H. Kattach[1] V. Mehta[1] R. Sayeed[1] E. Black[1]
1 Department of Cardiothoracic Surgery, Oxford University Hospitals NHS Trust, United Kingdom; 2 University of Oxford Oncology Department, United Kingdom

011 08:15 **Risk of Intrathoracic Recurrence of Thymoma Following Preoperative Diagnostic Biopsy: A Cohort Study**
J.L. Atkins; A.G. Nicholson; A. Rice; H. Pattenden; M. Dusmet; S. Jordan; G. Ladas; V. Anikin; E. Beddows; E. Lim
Royal Brompton and Harefield NHS Trust, United Kingdom

012 08:25 **Analysis of Potential Quality Outcome Measures for Lung Cancer Surgery Across a Cancer Network**
Annabel Sharkey; S.S. Begum; D. Hopkinson; T. Locke; J. Rao; J. Edwards
Department of Cardiothoracic Surgery, Northern General Hospital, Sheffield Teaching Hospitals NHS, United Kingdom

013 08:35 **Surgical Therapy for Necrotizing Pneumonia and Lung Gangrene**
M. Schweigert[1] R.J. Stadlhuber[1] C. Gunther[1] M. Beron[1] A. Dubecz[1] H.W. Waclawiczek[2] H.J. Stein[1]
1 Department of Thoracic Surgery, Klinikum Nuremberg Nord, Germany; 2 Department of Surgery, University Hospital PMU Salzburg, Austria

07:30 - 08:50 **Thoracic - Lung Volume Reduction**
Charter 2 *Chair/s: Mr Sasha Stamenkovic, Mr Jagan Rao and Dr Wilfred Wooldridge*

014 07:30 **Lower Lobe Lung Volume Reduction Surgery: Post Operative Impact on Pulmonary Function and Health Status**
Paul Aifesehi; I. Oey; M. Morgan; S. Rathinam; T.J. Spyt; D.A. Waller
University Hospitals of Leicester, Glenfield Hospital, United Kingdom

015 07:40 **Does a Staged Unilateral Approach to Lung Volume Reduction Surgery Run the Risk of Missing the Boat ? What Happens to the Non-Operated Lung?**
P.A. Gupta; K.K.W. Lau; I. Aslam; I. Oey; S. Rathinam; M. Morgan; D. Waller
Glenfield Hospital, United Kingdom

016 07:50 **Non-Surgical Approach for Lung Volume Reduction: A Single Centre Experience with Endobronchial Valves**
R.S. George[1] R. Govindraj[1] W. MacDonald[2] R. Milton[1] K. Papagiannopoulos[1] N. Chaudhuri[1]
1 St James's University Hospital, United Kingdom; 2 Leeds General Infirmary, United Kingdom

017 08:00 **The use of Endobronchial Valves for Lung Volume Reduction: An Early Experience**
O. Nawaytou; G. Elshafie; R. Sabit; M. Kornaszewska
University Hospital of Wales, United Kingdom

018 08:10 **Lung Volume Reduction (Surgery): Time to Reduce Collateral Damage?**
Paul Vaughan[1] M. Kornaszewska[2] U.B.V. Naidu[1]
1 Birmingham Heartlands Hospital, United Kingdom; 2 University Hospital Wales, United Kingdom

08:20 - 08:45 **Bronchoscopic Interventions for Emphysema- Current Status and Future Directions!**
Dr M Munnavar
Consultant Chest Physician, Clinical Director and Lead Lung Cancer Physician, Lancashire Teaching Hospitals

07:30 - 08:50 **Cardiac / Scientific Papers**
Exchange 9 *Chair/s: Mr Michael Poullis, Prof Danny Keenan and Dr Akbar Vohra*

019 07:30 **Mitochondrial Remodelling in a Mouse Model of Coronary Heart Disease**
Simon Duggan; A.P. Halestrap; G.D. Angelini; M.S. Suleiman
Bristol Heart Institute, United Kingdom

020 07:40 **The Right Ventricle Performs as Well as the Left Ventricle in the DCD Donor Heart**
Fouad Taghavi[1] C.E. Woods[1] A Ali[2] S.R. Large[2] E. Ashley[1]
1 Stanford University, USA; 2 Papworth Hospital NHS Foundation Trust, United Kingdom

021 07:50 **Activation of Leukocytes During Surgery with Cardiopulmonary Bypass is Attenuated by Sulforaphane in a Porcine Model: A Novel Therapeutic Strategy**
Bao Nguyen[1] G. Jakaj[2] H.M.L. Naase[1] L.A. Luong[3] J.R. Finch[2] J. Mulholland[2] J.R. Anderson[2] D.O. Haskard[1] G.D. Angelini[2] P.C. Evans[3]
1 BHF Cardiovascular Sciences Unit, National Heart and Lung Institute, UK, United Kingdom; 2 Department of Cardiothoracic Surgery, Imperial College London, UK, United Kingdom; 3 Department of Cardiovascular Science, University of Sheffield, UK, United Kingdom

022 08:00 **Allogeneic Red Cell Transfusion Causes Acute Lung Injury in the Absence and Presence of Cardiopulmonary Bypass in a Novel In-Vivo Porcine Model**
Nishith Patel[1] H. Lin[1] C. Jones[1] G. Walkden[1] P. Ray[2] P.A. Sleeman[1] G.D. Angelini[1] G.J. Murphy[1]
1 Bristol Heart Institute, United Kingdom; 2 Weston General Hospital, United Kingdom

023 08:10 **Investigating Novel Regulators and Inhibitors of Aortic Valve Calcification**
D.A. Lerman[1] N.C.W. Mackenzie[1] D. Zhu[1] S. Prasad[2] W. Walker[2] M. Dweck[3] D. Newby[3] V.E. Mac Rae[1]
1 The Roslin Institute and Royal (Dick) School of Veterinary Studies, The University of Edinburgh, United Kingdom; 2 Royal Infirmary Hospital of Edinburgh (NHS Lothian)/University of Edinburgh, United Kingdom; 3 Centre for Cardiovascular Science, University of Edinburgh, United Kingdom

024 08:20 **Histological Appearances and Tensile Strength of Mesh Supported Carotid Arteries Four Months After Implantation: A Controlled Comparison in Sheep**

P. Verbrugghe[1] F. Rega[1] E. Verbeken[1] M. Gelliwig[1] B. Meyns[1] T. Golesworthy[2] T. Treasure[3] J. Pepper4
1 University Hospitals Leuven, Belgium; 2 Exstent Ltd, United Kingdom; 3 Clinical Operational Research Unit UCL, United Kingdom; 4 Royal Brompton and Harefield NHS Trust

025 08:30 **Perhexiline Modulates Myocardial Energetics and Emeliorates Redox Stress**

Nigel Drury[1] D.T. Ngo[2] M.P. Frenneaux[3] D. Pagano[1] J.D. Horowitz[2]
1 Queen Elizabeth Hospital Birmingham, United Kingdom; 2 University of Adelaide, Australia; 3 University of Aberdeen, United Kingdom

026 08:40 **Diabetic Cardiomyopathy - Proof of an Elevated Myocardial Oxidative Stress in CABG Patients?**

Katja Denk[1] Y. Gramlich[2] U. Hink[2] T. Muenzel[2] A. Daiber[2] C.F. Vahl[3]
1 Dep. of Cardiothoracic and Vascular Surgery, Johannes-Gutenberg University of Mainz, Germany; 2 Cardiology, University of Mainz, Germany; 3 Cardiothoracic and Vascular Surgery, University of Mainz, Germany

08:00 - 08:45 **Education Sub Committee**
Organisers 1 *Chair: Mr Chris Munsch*

08:45 - 10:00 **Patients' Greeting**
Charter 3/David Geldard MBE room
Ms Jeanette Douglass

08:50 - 10:00 **Cardio Solutions Opening Plenary Session: Does Teamwork Improve Patient Outcomes?**
Exchange Auditorium *Chair/s: Dr Donna Greenhalgh, Professor David Taggart, Dr Niall O'Keeffe and Mr Graham Cooper*

Rt Hon Stephen Dorrell MP, Chair Health Select Committee
Introduced By Donna Greenhalgh - President ACTA
David Taggart - President SCTS

08.45 **Welcome, Where We Are, Where We Are Going, Teamwork**
Donna Greenhalgh

09:0 **Welcome and Introduction of Stephen Dorrell**
David Taggart

09:15 **Stephen Dorrell**

09:45 **Questions**

09:00 - 10:00 **Database Managers Informal Session**
Exchange 6/7

10:00 - 10:45 **Thoracic Sub Committee**
Organisers 3 *Chair/s: Mr John Duffy and Mr Graham Cooper*

10:00 - 10:45 Coffee in Exhibition Hall
Exhibition Hall

10:00 - 17:00 **Ethicon Wet Lab**
Charter 3

10:00 - 17:00 **Sorin Wet Lab**
Charter 4

10:45 - 12:30 **Congenital Session**
Exchange 10 *Chair/s: Dr Ignacio Malagon, Mr Victor Tsang and Mr Mark Danton*

10:45 143 **Use of Mathematical Modeling to Compare Haemodynamic Effects of Hybrid and Surgical Norwood Palliations for Hypoplastic Left Heart Syndrome**
Catriona Baker[1] D. Cosentino[2] C. Corsini[3] G. Pennati[3] G. Dubini[3] F. Migliavacca[3] T.Y. Hsia[1]
1 Great Ormond Street Hospital, United Kingdom; 2 University College London, United Kingdom; 3 Politecnico di Milano, Italy

10:55 144 **A Clinically Validated Patient-Specific Virtual Model to Compare Single Ventricle Stage 2 Surgical Strategies**
Catriona Baker[1] C. Corsini[2] S. Schievano[3] E. Kung[4] G. Arbia[5] F. Migliavacca[2] G. Pennati[2] A. Marsden[4] I. Vignon-Clementel[5] A. Dorfman[6] T. Hsia[1]
1 Great Ormond Street Hospital, United Kingdom; 2 Politecnico di Milano, Italy; 3 University College London, United Kingdom; 4 University of California, San Diego, USA; 5 Institut National de Recherche en Informatique et en Automatique, France; 6 University of Michigan, USA

145 11:05 **Continued Surgical Review Meetings: A Multidisciplinary Clinical Model for Quality Control and Mentoring**
Nicola Viola[1] D. Pousios[1] A. Lipnevicious[1] M.P. Haw[1] M. Kaarne[1] A.P. Salmon[1] K. Catchpole[2]
1 Southampton University Hospital, United Kingdom; 2 Cedars Hospital, USA

146 11:15 **Morbidity after Cardiac Surgery in Adult Congenital Heart Disease Patients. Does it Differ from the Acquired Heart Disease Patients?**
N. Nikolaidis[1] S. Narsupalli[1] S. Mendis[2] R. Gunda[1] M. Haw[1] G. Veldtman[1]
1 Southampton University Hospital/Wessex Department, United Kingdom; 2 Southampton University, United Kingdom

147 11:25 **Controlling Reoxygenation During Cardiopulmonary Bypass Reduces Transcriptomic Changes in Cyanotic Patients with Tetralogy of Fallot**
Massimo Caputo[1] D. Kenny[1] S. Stoica[1] A.J. Parry[1] G.D. Angelini[2] M. Ghorbel[2]
1 Bristol Royal Hospital for Children, United Kingdom; 2 Bristol Heart Institute, United Kingdom

11:35 - 12:30 Exchange 10 **Management of the Stiff Right Ventricle Following Congenital Heart Operations**
Dr Susannah Price, Consultant in Paediatric Cardiology and Intensive Care, Royal Brompton and Harefield NHS Trust

12:30 - 13:30 Exchange 10 **Progress in Designation of GUCH Services**
(Lunch Boxes provided)

10:45 - 12:30 Exchange 11 **Safe Surgery Symposium**
Chair/s: Professor Marjan Jahangiri and Dr Jean-Pierre Van Besouw

Consensus View on Best Practice in Cardiac Surgery
Defining the Best Practice in the Delivery of Cardiac Surgery, Anaesthesia and Critical Care

Pre-op Assessment / Team Working:
Dr Mahesh Prabhu, Consultant Anaesthetist, Freeman Hospital, Newcastle
1. Do all patients need anaesthetic input in pre-assessment?
2. Is there a need for subspecialisation? Cardiac surgery and anaesthesia.
3. Do all patients require discussion at an MDT?
4. Should ALL patients have pre-op echocardiogram?

Intra-operative practice:
Dr David Smith, Consultant Anaesthetist, Southampton
a) Standards for delivery of cardiac anaesthesia:
What is the minimum standard for intra-operative monitoring?
1. What is the minimum number of screens?
2. What IT / investigations should be available in theatre? CT / Angio / Echo?
3. Hybrid theatres
4. Availability of intra-operative echocardiography?

b) Theatre environment:

1. WHO safe surgery checklist?
2. WHO does it? When is it done, pre or post anaesthesia?
3. WHO takes any notice?
4. WHO cares?

c) Minimum standards for clinical perfusion. What has changed since 2006?

Mr Simon Philips, Senior Perfusionist, St. George's Hospital, London

1. Who should give the drugs during bypass?
2. 1 or 2 perfusionists in theatre?
3. New technologies?
4. Who sets the perfusion parameters, eg. Hb?

Surgical team and intra-operative practices:

Mr Gopal Soppa, Clinical Academic Lecturer / Specialist Registrar, St. George's Hospital, London

1. Do we need a regular team familiar with each other and the patient?
2. How many assistants?
3. At what level of training?
4. Role of non-medical assistants?
5. Who should help out of hours?
6. Is it acceptable to have non-surgeons assist?

Delivery of critical care for cardiac patients:

Dr Nick Fletcher, Consultant Anaesthetist & Intensivist, St. George's Hospital, London

1. 24 hour cardiac recovery vs. ICU for routine cardiac cases?
2. Who should look after the patient? Surgeons or anaesthetist (intensivist)?
3. 24 / 48 hour cut-off?
4. Cardiac anaesthetist/intensivist vs. general intensivist?
5. Protocolised care and outcomes?
6. Training for surgeons in ICU?
7. Dedicated cardiac intensivist on a 7 day rota?

10:45 - 12:35 **TAVI Papers**

Exchange 9 *Chair/s: Mr Andrew Owens, Mr Neil Moat and Dr Andy Klein*

027 10:45 **TAVI vs SAVR in Patients with Severe Aortic Stenosis: Results from an Intermediate Risk Propensity-Matched Population of the Italian OBSERVANT Study**

Francesco Onorati[1] F. Santini[1] M. Ranucci[2] R.D. Covello[3] M. Barbanti[4] C. Tamburino[4] P. D'Errigo[5] S. Rosato[5] G. Santoro[6] F. Seccareccia[5]
1 Division of Cardiac Surgery University of Verona Medical School, Italy; 2 Department of Cardiothoracic and Vascular Anesthesia and ICU - IRCCS Policlinico San Donato, Milan, Italy; 3 Department of Anesthesia

and Intensive Care, S. Raffaele University, Milan, Italy; 4 Division of Cardiology, Ferrarotto Hospital, University of Catania, Italy; 5 National Centre for Epidemiology, Surveillance and Health Promotion - Istituto Superiore di Sanità,, Italy; 6 Division of Cardiology, Careggi Hospital, Florence, Italy

028 10:55 **Expanded Experience using the Transaortic Approach for Transcatheter Valve Implantation using the Edward Sapien Valve**
Rizwan Attia; M. Thomas; S. Redwood; J. Hancock; K. Macgillivary; K. Wilson; C.P. Young; V. Bapat
Guy's and St Thomas' Hospital, United Kingdom

029 11:05 **Conventional Aortic Valve Replacement Surgery in Patients not Suitable for Transcatheter Aortic Valve - Outcome Assessment**
R. Beattie; K. Booth; M. Jones; M. Spence
Royal Victoria Hospital, United Kingdom

030 11:15 **Clinical Outcomes of Trans-Catheter Aortic Valve Implantation via the Subclavian Artery: A UK TAVI Registry Study**
Moninder Bhabra[1] U. Trivedi[2] M. Jahangiri[3] D. Blackman[4] S. Khogali[1] D. Hildick-Smith[2] D. Cunningham[5] P. Ludman[6] N. Moat[7]
1 Royal Wolverhampton Hospitals NHS Trust, United Kingdom; 2 Royal Sussex County Hospital, United Kingdom; 3 St Georges Healthcare NHS Trust, United Kingdom; 4 Leeds Teaching Hospitals NHS Trust, United Kingdom; 5 Central Cardiac Audit Database, United Kingdom; 6 University Hospital Birmingham NHS Trust, United Kingdom; 7 Royal Brompton and Harefield NHS Trust, United Kingdom

031 11:25 **Transcatheter Aortic Valve Implantation with Edwards Sapien Valve for the Treatment of Degenerated Bioprosthesis: the UK Sapien User Group Experience**
Michael Sabetai[1] V. Bapat[2] UK Edwards Sapien User Group[3]
1 St Thomas' Hospital, United Kingdom; 2 St Thomas' Hospital, United Kingdom; 3 UK Edwards Sapien User Group, United Kingdom

032 11:35 **Aortic and Mitral Regurgitation Persist Following Transcatheter Aortic Valve Implantation**
Sion Jones; N.R. Abdulkareem; D. Roy; S. Brecker; M. Jahangiri
St George's Hospital, United Kingdom

033 11:45 **Cerebral Oximetry Monitoring During Transcatheter Aortic Valve Implantation (TAVI)**
H. R. Bilal; A. Tang; M. Hartley; C. Humphries; R. More; S. Roberts; F. Sogliani
Blackpool Victoria Hospital, United Kingdom

034 11:55 **Clinical and Procedural Outcomes from Transcatheter Aortic Valve Implantation via the Trans-Aortic Approach**

M. Bhabra[1] S. Khogali[2] D. Hildick-Smith[3] S. Brecker[4] M. Jahangiri,[4] C. Mario[5] N. Moat[5] J. Cockburn3 ; U. Trivedi[3]
1 Royal Wolverhamptom NHS Trust, United Kingdom; 2 Brighton, United Kingdom; 3 Royal Sussex County Hospital, United Kingdom; 4 St George's Hospital, United Kingdom; 5 Royal Brompton and Harefield NHS Trust, United Kingdom

035 12:05 **Transcatheter Aortic Valve Implantation is Associated with Significant Regression of Left Ventricular Hypertrophy - A One Year Follow-up Study**

A. Alassar; R. Patel; A. Marciniak; N. Abdulkareem; O. Valencia; M. Jahangiri
St George's Hospital, United Kingdom

036 12:15 **One Year Mortality Following Transcatheter Aortic Valve Implantation: Incidence, Predictive Factors and Causes of Deaths**

A. Alassar; J. Davey; S. Brecker; M. Jahangiri
St George's Hospital, United Kingdom

037 12:25 **Cerebral Desaturation during Transcatheter Aortic Valve Implantation (TAVI)**

C.A. Brodie[1] R.J.B. Allan[2] S. Asopa[2] P.M. Robbins[2] M.J. Bennett[2]
1 Peninsula College of Medicine and Dentistry, United Kingdom; 2 South West Cardiothoracic Centre, United Kingdom

10:45 - 12:30 **Database Managers Meeting**
Exchange 6/7 *Chair/s: Mr Ben Bridgewater, Ms Tracey Smailes*

038 10:45 **The EuroSCORE: A Neglected Measure of Medium Term Survival Following Cardiac Surgery**

Ahmed Habib[1] A. Dhanji[1] K. Baig[1] S. Gallagher[1] W.I. Awad[2] A.J. Wood[2] R. Uppal[1]
1 Barts and the London NHS Trust, United Kingdom; 2 Barts and the London NHS Trust, United Kingdom

039 10:55 **Modified EuroSCORE: Should High-Risk Patients be Excluded from Governance Analyses?**

Stuart Grant[1] G.L. Hickey[1] I. Buchan[1] B. Bridgewater[2]
1 University of Manchester, United Kingdom; 2 University Hospital of South Manchester, United Kingdom

040 11:05 **Performance of Euroscorell in Elective and Emergency Cardiac Surgery: A Pilot Study**
A. Barua[1] W. Elmahdy[1] R.U. Nair[2]
1 Leeds General Infirmary, United Kingdom; 2 Leeds General Hospital, United Kingdom

11:15 - 11:35 **Current Initiatives**
Ben Bridgewater, Consultant Cardiac Surgeon, University Hospital of South Manchester

11:35 - 12:05 **Cleaning and Analysis of SCTS Database**
Graham Hickey, Statistician, University of Manchester

12:05 - 12:30 **Discussion**

10:45 - 12:30 **Ethicon Cardiothoracic Forum**
Charter 3/David Geldard MBE room
Chair/s: Professor Sir Bruce Keogh and Ms Christina Bannister

10:45 **Opening Remarks, Ms Tara Bartley**

10:50 **Welcome and Introduction Professor Sir Bruce Keogh**

11:00 **Tony Nash, Olympic Champion, Gold Medal Winner, Team Work and Success - My Experience**

11:30 **'Patient Partnership in decision Making' the Patient, the Surgeon, the Anaesthetist and the Nurse**
Baroness Billingham, of Banbury in the County of Oxfordshire. Life Peer House of Lords, sits on the Labour benches,
Mr David Soul
Actor & Musician, Patient, Royal Brompton and Harefield NHS Trust
Mr Eric Lim
Consultant Thoracic Surgeon, Royal Brompton and Harefield NHS Trust, Senior Lecturer, National Heart and Lung Institute, Imperial College
Judy Cotterill
Ward Manager Post Anaesthetic Care Unit (PACU), Royal Brompton and Harefield NHS Trust
Dr Kathryn Fogg
Anaesthetic Consultant, Royal Brompton and Harefield NHS Trust

10:45 - 12:30 **Heart Research UK**
Exchange **Organ Protection in Cardiac Surgery**
Auditorium *Chair/s: Professor Gianni Angelini, Mr Sunil Ohri and Dr David Whitaker*

041 10:45 **TEE Guided Continuous Monitoring of Renal Perfusion During OPCAB as a Perioperative Predictor of Renal Dysfunction - A Pilot Study**
Saikat Bandyopadhyay
Medica Superspecialty Hospital Kolkata, India

042 10:50 **A Randomised Controlled Trial of Acid Base Management During Profoundly Hypothermic Cardiopulmonary Bypass**
V.B. Dronavalli[1] A. Menon[1] T. Jones[2] J. Mascaro[1] S. Matthews[1] D. Green[1] T. Oelofse[1] R.S. Bonser[1]
1 University Hospital Birmingham, United Kingdom; 2 Birmingham Children's Hospital, United Kingdom

043 10:55 **Renal Inflammation, Oxidative Stress and Apoptosis during Acute Kidney Injury: Effects of Hypercholesterolaemia and Cardiopulmonary Bypass**
G.J. Murphy[1] P. Sleeman[1] N.N. Patel[1] H. Lin[1] G.I. Welsh[2] G. Walkden[1]
1 Bristol Heart Institute, United Kingdom; 2 University of Bristol, United Kingdom

11:00 **Update on Cardiac Protection**
Professor Andrew Wechsler
Chair, Department of Cardiothoracic Surgery Drexel University College of Medicine, Philadelphia, USA

11:20 **The Latest in Gastrointestinal and Renal Protection**
Professor Mark Stafford-Smith
Dept of Anesthesiology, Duke University Medical Center, USA

11:40 **Best Steps in Cerebral Protection**
Professor Thoralf Sundt III
Massachusetts General Hospital, USA

12:00 **Lung Protection in Cardiac Surgery**
Professor Luciano Gattinoni
Director of the School of Anesthesia and Intensive Care at the University of Milan, Italy

12:20 **DISCUSSION**

10:45 - 12:30 **Thoracic - Analgesia Strategies**
Charter 2 *Sponsored by Fisher & Paykel*
Chair/s: Dr Jonathan Kendall and Mr Richard Page

044 10:45 **Audit of Paravertebral and Epidural Analgesia Following Open Thoracic Surgery**
Lynn Fenner; M. Molyneux; N. Rasburn; D. West
Bristol Royal Infirmary, United Kingdom

045 10:55 **Paravertebral Versus Epidural Analgesia for Post-Thoracotomy Pain Management**
Eustace Fontaine; M. Diab; I. Whittle; M. Shackcloth; M. Carr; S. Scholz; J. Kendall; T. Ridgway; G. Russell
Liverpool Heart and Chest Hospital, United Kingdom

046 11:05 **The Quality of Post-Operative Pain Relief with Thoracic Epidural Analgesia in Bilateral Lung Transplant Recipients**
I.J. Baxter; S.T. Ahmed
Freeman, Newcastle upon Tyne, United Kingdom

046a 11:15 **Effectiveness of Postoperative Analgesia in Lung Resection Patients**
Walker, E.J.[1] Matzelle, S.[2] Weightman, W.[2]
1 Gartnavel General Hospital, United Kingdom, 2 Sir Charles Gairdner Hospital, Perth, Australia

11:25 **Dr Nigel Scawn, Consultant Anaesthetist - Paravertebral and Epipleural - The Patients' Favourite?**

11:40 **Dr Alistair Macfie, Consultant Anaesthetist, Glasgow - Thoracic Epidurals - No Doubt the Preferred Option?**

11:55 **Mr Jim McGuigan, Consultant Surgeon, Belfast - Post Thoracotomy Analgesia - The Surgeon's View**

12:10 **Discussion**

10:30 - 17:00 **Society of Clinical Perfusion Scientists - Executive Committee**
Exchange 2

Chair: Mr Stephen Robins

12:30 - 13:30 Lunch
Exxhibition Hall

13:30 - 15:00 **Leader as Educator**
Exchange 11 *Chair/s: Mr Chris Munsch, Dr Tom Pierce and Miss Lisa Hadfield Law*

047 13:30 **Leader as Educator - Developing High Performance Cardiothoracic Trainers**
Chris Munsch[1] L. Hadfield Law[2] T. Graham[3] D. O'Regan[1] S. Livesey[4] M. Lewis[5]
1 Leeds General Infirmary, United Kingdom; 2 Independant Evaluator, United Kingdom; 3 University of Birmingham Hospital, United Kingdom; 4 Southampton General Hospital, United Kingdom; 5 Brighton, United Kingdom

13:40 **Not Just Trainers - Cardiothoracic Consultants as Educators**

This session is for those in cardiothoracic surgery / anaesthesia who are interested in delivering more than just bog standard training. It doesn't take much to stand out from the crowd, and we might be able to show you how. Participants in this session will be able to:

1) Compare themselves against the 7 habits of Silver scalpel winners
2) Explore opportunities available through the leader as Educator programme
3) Identify their own learning and leadership styles and their impact on their role as teacher
4) Plan how they might use a simple coaching model to maximise the impact of their teaching and assessment

13:30 - 15:00 **Plenary Session: How do we provide the Out-of-Hours Service?**
Exchange Auditorium
Chair/s: Mr Steve Livesey and Dr Jonathan Mackay

13:30 **Introduction**
Dr Johnathan Mackay

13:35 **Out of Hours Cardiothoracic ITU Cover**
The Large Cardiothoracic ITU:
Dr Tim Strang

The Nottingham Model
Nursing perspective
Ms Sue Redfearn

Surgical Perspective
Mr David Richens

14:05 **Using the Full Potential of Non-Medical Staff in the Cardiothoracic Unit as a Whole**
Ms Tara Bartley

14:15 **Training Perspectives**
Surgeons
Mr Steven Livesey

Anaesthetists
Dr Alistair Macfie

14:35 **Should the SCTS Set Appropriate Standards for Out-of-hours Care**
Professor Marjan Jahangiri

14:45 **Discussion**

13:30 - 15:00 **Patients' Forum and Ethicon Cardiothoracic Nurses Forum**
Charter 3/David Geldard MBE room
Chair/s: Professor Sir Bruce Keogh and Ms Jeanette Douglas

048 13:30 **Are CABG Patients Well Informed by the Internet?**
A.K. Kar; R.H.J. Trimlett; J.R. Finch
Royal Brompton and Harefield NHS Trust, United Kingdom

049 13:45 **Cardiothoracic Wound Clinic Audit of Patients Experience**
Pascaline Njoki[1] S. Datta[2] P.A. Gowland[2]
1Manchester Heart Centre; United Kingdom; 2 Manchester Heart Centre, United Kingdom

050 14:00 **Patient's Experiences of a Pre- and Post Surgery Rehabilitation of Lung Cancer (ROC) Programme: A Qualitative Interview Study**
A. Bradley[2] Kumara Krishna Raju Jayaramakrishnan[1] B. Naidu[2] A. Parsons[3] L. Reaper[4] C. Jordan[5] P. Aveyard[6] G. Dowswell[7]; J. Dunn[8]
1 Heartlands Hospital NHS Trust, United Kingdom; 2 Heartlands Hospital, United Kingdom; 3 Primary Care Clinical Sciences, University of Birmingham, United Kingdom; 4 Heartlands Hospital Birmingham, United Kingdom; 5 Worcester Royal Infirmary, United Kingdom; 6 Primary Care Clinical Sciences, University of Birmingham, United Kingdom; 7 Primary Care Clinical Services, University of Birmingham, United Kingdom; 8 Warwick Medical School, United Kingdom

051 14:15 **Thoracic Day Case Surgery - The Patient Experience**
C. Goatman; A. Nasir; P. Krysiak
University Hospital of South Manchester, United Kingdom

052 14:30 **The Effectiveness of Incentive Spirometry in Patients Following Thoracotomy and Lung Resection, Including Those at High Risk**
K Parker[1] Agostini[1] H. Cieslik[1] B. Naidu[1] P Rajesh[1] R Steyn[1] E Bishay[1] M Kalkat[1] S. Singh[2]
1 Heart of England NHS Foundation Trust, United Kingdom; 2 Coventry University, United Kingdom

053 14:45 **Exploration of Patient Physical Activity Level Following Thoracotomy and Lung Resection**
P. Agostini[1] H. Cieslik[1] B. Naidu[1] P Rajesh[1] R Steyn[1] E Bishay[1] M Kalkat[1] S Singh[2]
Heart of England NHS Foundation Trust, United Kingdom; 2 Coventry University, United Kingdom

13:30 - 15:00 **Congenital Session**
Exchange 10 *Chair/s: Dr Mark Forrest, Mr Andrew Parry and Mr Lars Nolke*

The Blalock-Taussig Shunt - How Can we do it Better?
Dr Duncan MacRae
Consultant in Paediatric Intensive Care, Royal Brompton and Harefield NHS Trust

14:15 - 15:00 **Indications, Contraindications and Expectations for Heart Transplantation in the 21st Century For Patients with Congenital Cardiac Disease**
Mr Victor Tsang
Consultant Cardiothoracic Surgeon, Great Ormond Street Hospital

13:30 - 15:00 **Thoracic Research Collaborative**
Charter 2 Sponsored by Medela
Chair/s: Mr Babu Naidu and Professor Fang Gao Smith

Welcome

Update on Current Projects

New Projects and Feedback

New collaborations - NCRN
Mr Matthew Hatton
Consultant in Clinical Oncology, Weston Park Hospital, Sheffield, UK

Close of Meeting and Summary

13:30 - 15:00 **Organ Failure**
Exchange 9 *Chair/s: Dr Andrew Lumb and Mr Richard Firmin*

13:30 **Mechanical Support for the Right Heart**
Dr Jonathan Leff
Montefiore Medical Center, USA

14:00 **ECMO as an Alternative to Ventilation**
Professor Luciano Gattinoni
Director of the School of Anesthesia and Intensive Care at the University of Milan, Italy

15:00 - 15:45 Tea
Exxhibition Hall

15:00 - 15:45 **Thoracic Films**
Charter 2 *Chair: Mr Aman Coonar*

054 15:00 **Structured Light Plethysmography: Assessment of its role as a Non-Contact Tool to Measure Spirometry and Regional Chest Wall Movement**

I.K. Levai[1] S. Baker[2] W. de Boer[2] W. Hills[2] R. Iles[3] A.S. Coonar[1]
1 Papworth Hospital NHS Foundation Trust, Cambridge University Health Partners, United Kingdom; 2 PneumaCare Ltd., United Kingdom; 3 Addenbrooke's Hospital, Cambridge University Health Partners, United Kingdom

055 15:08 **Supraclavicular Approach for Resection of First Rib. Report of Two Cases**

E. Addae-Boateng; I. Hernandez; L. Socci; A.E. Martin-Ucar
Nottingham university Hospitals NHS Trust, United Kingdom

056 15:16 **Resection of Distal Tracheal Carcinoma in a Patient with Right Sided-Aorta via Left Thoracotomy**

L. Socci; M. Kumaran; M. Malik; A.E. Martin-Ucar
Nottingham University Hospitals NHS Trust, United Kingdom

057 15:24 **Single-Incision Video-Assisted Thoracoscopic Left Upper Lobectomy: Technical Details**

Diego Gonzalez-Rivas; R. Fernandez Prado; M. De la Torre Bravos
Minimally Invasive Thoracic Surgery Unit (UCTMI) and Coruña Hospital (CHUAC), Spain

059 15:40 **Video Assisted Thoracoscopic Surgery (VATS) Pleurectomy for Mesothelioma**

Kirmani; M. Scarci; R. Rintoul; A. Coonar
Papworth Hospital, United Kingdom

15:00 - 15:45 **Cardiac - Films**
Exchange 6/7 *Chairs: Mr Mike Lewis & Dr Nick Morgan-Hughes*

060 15:15 **Raphe Resection and Sub-Commissural Annuloplasty in a Regurgitant Restricted Type I Bicuspid Aortic Valve**

Hunaid Vohra; L. DeKerchove; D. Glineur; P. Norholmme; G. ElKhoury
Saint Luc University Hospital, Belgium

061 15:25 **Keeping the Patent Internal Mammary Artery out of Harms Way at Future Reoperation**

M. Abdelaziz; J. Bedi; J. Parmar
University Hospitals Coventry and Warwickshire NHS Trust, United Kingdom

062 15:35 **Off Pump Excision of Coronary Muscle Bridge Through a Mini-Thoracotomy - A New Approach**
P. Youssefi; V. Chandrasekaran
St. George's Hospital, London, United Kingdom

15:45 - 17:30 **3D Echo Session**
Exchange 11 Sponsored by GE
Chair/s: Professor Tom Spyt, Dr Donna Greenhalgh and Dr Niall O'Keeffe

063 15:45 **Importance of Early Recognition of Vascular Anastomotic Complications in Lung Transplantation**
A.K. Bose; H. Muse; K. Morley; L. Kenny; J.H. Dark; S.C. Clark
Freeman Hospital, United Kingdom

064 15:55 **The Impact of Routine use of Intraoperative Transoesophageal Echocardiography in Adult Cardiac Surgery - A Prospective Study**
K.H.K. Morcos[1] P. Saravanan[2]
1 Golden Jubilee National Hospital, United Kingdom; 2 Lancashire Cardiac Centre, Victoria Hospital, Blackpool, United Kingdom

065 16:05 **Is 3D Echocardiography Better Than 2D Echocardiography in Intra-Operative Assessment of Adults Undergoing Aortic Valve Replacement?**
R. Basu[1] G. Muthuswamy[2] J.C.Y. Lu[3]
1 Department of Cardiac Anaesthesia, Trent Cardiac Centre, City campus, Nottingham University Hospital, United Kingdom; 2 Department of Cardiac Anaesthesia, Trent Cardiac Centre, City Campus, Nottingham University Hospital, United Kingdom; 3 Department of Cardiac Surgery, Trent Cardiac Centre, City campus, Nottingham University Hospitals NH, United Kingdom

16:15 **3D Ventricular Assessment**
Dr. Jörg Ender
Direktor, Abteilung für Anästhesiologie und Intensivmedizin II, Leipzig, Germany

16:35 **3D Valvular Assessment**
Dr. Manfred Seeberger
University of Basle, Anesthesia and Intensive Care Medicin, Switzerland

16:55 **Pitfalls of 3D Echo**
Mr Thomas Mathew
Consultant Cardiologist, Nottingham City Hospital

17:15 **Discussion**

15:45 - 17:30 **Trainees Meeting**
Exchange 9 *Chair/s: Ms Betsy Evans and Mr Steve Livesey*

15:45 **Welcome and Overview of Meeting**
Trainee Representative Vote - Two Replacement Candidates
Junior and Senior
Result to be Announced at Trainee's Dinner
Ms Betsy Evans

16:00 **Training - EWTD Implementation and Clinical Outcomes**

066 16:00 **Impact of the Full Implementation of the European Working Time Directive on Surgical Training in Adult Cardiac surgery**
Balakrishnan Mahesh; M.A.M. Codispoti
Papworth Hospital, United Kingdom

068 16:10 **The Impact of Training on Clinical Outcomes and Resource Utilization in a High-Volume Cardiothoracic Surgical Centre**
S. Messer[1] U. Benedetto[2] M. Codispoti[1]
1 Papworth Hospital, United Kingdom; 2 Sant'Andrea Hospital, Italy

16:20 **Questions and Discussion**

067 16:30 **Global Trends in Cardiothoracic Surgical Academic Output : Is the UK Keeping Up?**
K. Schumacher; M. Ibrahim; C. McGregor
Heart Hospital, United Kingdom

16:40 **Cardiothoracic Trainees' Research Collaborative (CTRC)**
C Burdett

16:50 **Questions and Discussion**

17:00 **Possible Future Changes to Intercollegiate Examination**
Mr E J Smith, Mr S Livesey, Ms B Evans, Mr S Barnard

17:15 **Questions and Discussion**

15:45 - 17:30 **Congenital Session**
Exchange 10 *Chair/s: Dr Craig Bailey, Mr Nihal Weerasena and Mr Olivier Ghez*

089 15:45 **Outcome of Aortic Valve Repair in Paediatric Cardiothoracic Surgery**
Natasha Prior[1] A. Hatem[1] P. Reddy[1] R. Dhannapuneni[1] A. Corno[2] P. Venugopal[1] N. Alphonso[1]
1 Alder Hey Children's Hospital, United Kingdom; 2 Prince Salman Heart Center, Saudi Arabia, Saudi Arabia

090 15:55 **Repair of Aortic Coarctation in Low Birth Weight Neonates Can Be Achieved Safely and With Minimal Chance of Recurrence**
Qiang Chen; T. Fleming; M. Caputo; A. Tometzki; S. Stoica; A. Parry
Bristol Royal Hospital for Children, United Kingdom

091 16:05 **Outcome of Contegra Valved Conduit in Paediatric Cardiothoracic Surgery**
A. Hatem[1] Tash Prior[1] R.R.V. Dhannapuneni[1] G. Gladman[1] I. Peart[1] A. Davis[1] P. Venugopal[1] N. Alphonso[1] A.F. Corno[2]
1 Alder Hey Children's Hospital, United Kingdom; 2 King Fahad Medical City, Saudi Arabia

092 16:15 **The Ross Operation for Patients with Congenital Heart Disease: 11-year Trends and Results from the UK National Database**
S. Stoica; Q. Chen; S. Roldan; R. Capoun; M. Caputo; A. Parry
Bristol Children's Hospital, United Kingdom

093 16:25 **St. Jude Bileaflets Mechanical Pulmonary Valve Replacement: A Reasonable Alternative?**
Bassel Al-Alao; D. Trivedi; A.N.J. Graham; D.G. Gladstone; A.E. Wood
Royal Victoria Hospital, United Kingdom

094 16:35 **Effect of Dexmeditomidine on Pulmonaryarterial Pressure in Children with Congenital Heart Disease**
D.T. Inderbitzin[1] N.R. Kadam[2] O. Reuthebuch[1] S. Maiya[3] K. Muralidhar[2]
1 Clinic for Cardiac Surgery Basel-Bern, University Hospital Basel, Switzerland; 2 Department of Anaesthesia, Narayana Hrudayalaya Hospital, Bangalore, India; 3 Department of Cardiology, Narayana Hrudayalaya Hospital, Bangalore, India

16:45 - 17:30 **Surgery on the Atrioventricular Valve in Patients with Single Ventricle Morphologies**
Dr Constantine Mavroudis
Director, Congenital Heart Institute, Walt Disney Pavilion, Florida Hospital for Children, USA

15:45 - 17:30 **Coronary Artery Revascularisation**
Exchange 6/7 *Chair/s: Mr Vivek Pathi, Mr Tony De Souza and Dr Akbar Vohra*

095 15:45 **Management of Residual Severe Coronary Disease Following Primary PCI Since the Introduction of ESC / EACTS Guidelines on Myocardial Revascularisation**
Martin Yates; G.K.R. Soppa; O. Valencia; M. Jahangiri
Department of Cardiac Surgery, St George's Hospital, United Kingdom

096 15:55 **Myocardial Revascularisation - Are We Following European Guidelines?**
Victor Kung; O. Jarral; D.J. McCormack; Z. Astroulakis; A. Shipolini
London Chest Hospital, United Kingdom

097 16:05 **Effect of Diabetes and Chronic Kidney Disease on Long-Term Survival After Coronary Artery Bypass Grafting**
S Gallagher; D.A. Jones; M.J. Lovell; S. Hassan; A. Wragg; A. Kapur; A. Shipolini; W. Awad; K. Wong; K. Lal; M.M. Yaqoob; R. Uppal
Barts and the London NHS Trust, United Kingdom

098 16:15 **Cardioplegia, Fibrillatory Arrest or Off-Pump for CABG? Insights from 8,779 Operations Using Propensity Matching and Principal Component Analysis**
Dumbor Ngaage[1] A. Tang[2] F. Sogliani[2]
1 Basildon and Thurrock University Hospitals NHS Foundation Trust, United Kingdom; 2 Blackpool Teaching Hospitals, United Kingdom

099 16:25 **The Effect of ESC / EACTS Guidelines on Myocardial Revascularisation on Referral Patterns in Cardiac Surgery**
M.T. Yates; G.K.R. Soppa; O. Valencia; S.G. Jones; M. Jahangiri
Department of Cardiac Surgery, St Georges Hospital, United Kingdom

100 16:35 **Pump Head - Fact or Fiction? Cognitive Outcomes After On-Versus Off-Pump Coronary Revascularisation: A Meta-Analysis**
R.A. Sykes[1] J. Anderson[1] E.D. Kennedy[1] S.A. Mackenzie[1] M.M.H. Farhan-Alanie[1] D.E. Moore[1] R.P. Alston[2] Y. Ang[1] S. Chen[1] K. Choy[1]
1 University of Edinburgh, United Kingdom; 2 Royal Infirmary of Edinburgh, United Kingdom

101 16:45 **Successful Model of Stem Cell Accumulation on Decellularised Vessels: A Step Towards Tissue Engineered Graft**
Sion Jones[1] Y. Hu[2] Q. Xu[2] M. Jahangiri[1]
1 St George's Hospital, United Kingdom; 2 King's College London, United Kingdom

16:55 **SYNTAX 4 - Does it Tell us Anything New?**
Professor Andrew Wechsler
Chair, Department of Cardiothoracic Surgery Drexel University College of Medicine, Philadelphia, USA

17.10 **OPCAB - What is the Current Status?**
Professor David Taggart

15:45 - 17:15 **Ethicon Cardiothoracic Forum**
Charter 3/David Geldard MBE room
Chair/s: Mr Steve Woolley and Mr Andrew Eveleigh

069 15:45 **Walk-in Thoracic Surgery Clinics as Part of Multidisciplinary Rapid Access Lung Cancer Service**
P Gupta; J. Sharman; A. Bajaj; J. Bennett; S. Rathinam
Glenfield Hospital, United Kingdom

070 16:00 **The Development of a Nurse Led Protocol for Removal of Thoracic Drains Post Surgery**
D. Danitsch[1] A. Alzetani[1] S. Ghosh[2]
1 University Hospital of North Staffordshire, United Kingdom; 2 North Staffordshire Royal Infirmary, United Kingdom

071 16:15 **The Development and Implementation of the Band 4 Physiotherapy Assistant Practitioner Role at Papworth Hospital NHS Foundation Trust**
S.Drake; A. Eden
Papworth Hospital NHS Foundation Trust, United Kingdom

072 16:30 **Human Factors and Thoracic Anaesthesia: A National, Multi-Disciplinary Simulation and Skills-Based Course to Teach Non-Technical Skills**
N.A. Joshi[1] R. Sreenivasan[2] K. O' Connor[1] A. Nunn[3] A. Hemming[4] K. Wark[4] M.K. Molyneux[1] N. Rasburn[1]
1 University Hospitals Bristol, United Kingdom; 2 Barts and the London Medica Simulation Centre, United Kingdom; 3 Barts and the London Medical Simulation Centre, United Kingdom; 4 Barts and the London NHS Trust, United Kingdom

073 16:45 **Key Performance Indicators: A Physiotherapy Departments Performance for Patients Following Cardiothoracic Surgery and Cardiology In-Patients**
Allaina Eden
Papworth Hospital NHS Foundation Trust, United Kingdom

074 17:00 **The Impact of Implementing a Late Shift on a Physiotherapy Department's Respiratory on Call Service**
Allaina Eden
Papworth Hospital NHS Foundation Trust, United Kingdom

15:45 - 17:30 **Current Status of Extracorporeal Support in the UK**
Exchange Auditorium *Chair/s: Mr David Jenkins and Dr Julian Barker*

15:45 **Introduction**
Mr David Jenkins
Papworth Hospital, Cambridge

15:50 **Keynote Lecture 'ECMO is Just a Support'**
Mr Richard Firmin
Glenfield Hospital, Leicester

16:10 **Provision of Extracorporeal Services in the UK**
Dr Imogen Stephens
National Specialised Commissioning Team

16:20 **Impact of Extracorporeal Support on an ICU**
Ms Jo-Anne Fowles
Papworth Hospital, Cambridge

16:30 **Transport of Critically Ill Patients in the UK**
Mr Simon Finney
Royal Brompton and Harefield NHS Trust, London

16:40 **Cardiac support, ECMO or VAD?**
Mr David Jenkins
Papworth Hospital, Cambridge

16:50 **ECMO and CPR, a Step Too far?**
Dr Alain Vuylsteke
Papworth Hospital, Cambridge

075 17:00 **Outcome of Extracorporeal Membrane Oxygenation as Short Term Mechanical Support Following Heart Transplantation: a Single Centre Experience**
Sharath Hosmane; M. Devbhandari; R. Venkateswaran; J. Salaie; S. Williams; N. Yonan
University Hospital of South Manchester, United Kingdom

076 17:05 **Elective Transfer From Cardiopulmonary Bypass to Centrifugal Pump Support in Very High Risk Cardiac Surgery**
Stephen Westaby[1] R. De Silva[2] C. Grebenik[2]
1Oxford University Hospital NHS Trust, United Kingdom; 2 John Radcliffe Hospital, United Kingdom

077 17:10 **The Need for Thoracic Surgery in Adult Patients Receiving Extra Corporeal Membrane Oxygenation: A 16 year Experience**
Vijay Joshi; A. Nakas; D.A. Waller; C. Harvey; G. Peek; R. Firmin
Glenfield Hospital, United Kingdom

Case Reports
Papworth Hospital, Cambridge

15:45 - 17:45 **Thoracic Papers - Miscellaneous**
Charter 2 *Chair/s: Ms Juliet King, Mr John Edwards and Dr Robert Brown*

078 15:45 **The Physical Presence of a Thoracic Surgeon at a District General Hospital Lung Multi-Disciplinary Meeting Significantly Increases the Resection Rate**
M. Tahir[1] A. Nakos[2] A. Morris[2] B.V. Prathiba[2] R. Burcombe[3] J.E. Pilling[1]
1 Guys Hospital, United Kingdom; 2 William Harvey Hospital, United Kingdom; 3 Maidstone Hospital, United Kingdom

079 15:55 **Effect of European Working Time Directive Legislation on the Quality of Thoracic Surgical Training and Outcomes Following Lobectomy for NSCLC**
R. Warwick; M. Poullis; J. McShane; I. Whittle; M. Shaw; S. Woolley; R.D. Page; N. Mediratta; M.J. Shackcloth
Liverpool Heart and Chest Hospital, United Kingdom

080 16:05 **The Incidence of N2 Disease in NSCLC Tumours That Meet the Size Criteria for Lung Resection by VATS**
Johan Van der Merwe; A. Nicholson; S. Jordan; M. Dusmet; G. Ladas; E. Lim
Royal Brompton and Harefield NHS Trust, United Kingdom

081 16:15 **Outcome of Chest Wall Deformity Repair Using Ravitch Procedure Without Sternal Support Bar**
R.S. George; K. Papagiannopoulos
St James's University Hospital, United Kingdom

082 16:25 **Is Pneumonectomy Really a Disease?**
Michael Poullis[1] R. Page[2] M. Shackcloth[2] S. Woolley[2] T. Theologou[1] N. Mediratta[2]
1 Liverpool Heart and Chest Hospital, United Kingdom; 2 Surgery, United Kingdom

083 16:35 **Surgery for Pulmonary Aspergillosis: A National Centre's Experience**
S. Farid; S. Mohammed; M. Devbhandari; D.W. Denning; M.T. Jones; P. Krysiak; S.Y. Soon; R. Shah; K.S. Rammohan
Wythenshawe Hospital, United Kingdom

084 16:45 **A Systematic Error in the Prevalent Web-Based Thoracoscore Calculator: An Example of the Risks of Medical Calculators**
K. Turner[1] A. Ho[2] G. Rø3 ; F. Van Tornout[1]
1 Norfolk and Norwich University Hospital, United Kingdom; 2 Imperial College, London, United Kingdom; 3 University of Durham, United Kingdom

085 16:55 **Post-Operative Follow-up of Lung Cancer Patients: Do we Need a Radiologist?**
V. Fretwell; R.D. Page
Liverpool Heart and Chest Hospital, United Kingdom

087 17:25 **The Use of Endobronchial Valves for the Control of Complex Air Leaks**
G. Elshafie; O. Nawaytou; H. Fallouh; P. Vaughan; M. Kornaszewska
University Hospital of Wales, United Kingdom

088 17:35 **New Rib-Specific Fixation Systems: Time to Consider More Aggressive Operative Management of Traumatic Rib Fractures?**
A.R. Kendal; U. Abah; N. D'Souza; P.E. Belcher; E.A. Black
John Radcliffe Hospital, United Kingdom

17:30 - 19:00 **SCTS Annual Business Meeting**
Charter 3 *Chair/s: Professor David Taggart and Mr Graham Cooper*

19:30 - 23:59 **Annual Dinner - Midland Hotel**
Midland Hotel

Friday, April 20, 2012

08:00 - 10:00 **Stopping the Bleeding - Can we Agree Best Practice?**
Exchange *Chair/s: Mr Gavin Murphy, Dr Ravi Gill and Dr Andrea Kelleher*
Auditorium

08:00 **The Case for Patient Blood Management in Cardiac Surgery**
Mr Axel Hofmann, Health Economist, Medical Society for Blood Management, Laxenburg, Austria

08:20 **Perioperative Blood Management in Cardiac Surgery: Drugs, Techniques and Procedures**
Dr Davy Cheng, London Health Science Centre, University of Western Ontario, Canada

135 08:40 **Red Blood Cell Transfusion in Cardiac Surgical Patients: A Systematic Review of Observational Studies and Randomised Controlled Trials**
Nishith Patel; B. Avlonitis; G.D. Angelini; G.J. Murphy
Bristol Heart Institute, United Kingdom

134 08:50 **Aprotinin Significantly Reduces Re-exploration for Bleeding with no Increased Risk of Mortality: Results From a Mixed Treatment Meta-Analysis**
E.L. Senanayake[1] N.J. Howell[1] N. Freemantle[2] D. Pagano[1]
1 University Hospitals Birmingham, United Kingdom; 2 University College London, United Kingdom

09:00 **Aprotinin: Time for a reappraisal?**
Dr David Royston, Royal Brompton and Harefield NHS Trust, London UK

136 09:20 **Assessment of Platelet Dysfunction Following Cardiac and Complex Aortic Surgery Using the Multiplate(tm) Aggregometer - A Pilot Study**
Roofa Mushtaq[1] S. Paranjothy[2] M. Shaw[2] S. Agarwal[2]
1 University Hospitals Aintree, United Kingdom; 2 Liverpool Heart and Chest Hospital, United Kingdom

137 09:30 **Scheduling for Cardiac Surgery - Do we Really Need to Delay Surgery for Clopidogrel Cessation?**
Ishtiaq Ahmed; S. Asopa; M. Hasan; S. Hunter
James Cook University Hospital, United Kingdom

09:40 **Point of Care Testing and the Management of the Bleeding Patient**
Dr Marco Ranucci
Istituto Policlinico S.Donato, Milan, Italy
Ravi Gill, Southampton University Hospitals Trust, Southampton, UK

08:00 - 08:40 **Thoracic - Oesophageal**
Exchange 6/7 *Chair/s: Mr Jim McGuigan, Mr John Pilling and Dr Robert Brown*

102 08:00 **Routine Water Soluble Contrast Swallow Has Limited Clinical Value in the Detection of Anastomotic Leaks Following Oesophagectomy**
S.M. Love; S. Bruce; T.S. Athwal; M. Brett; N. Howes; M. Hartley
Liverpool Heart and Chest Hospital NHS Foundation Trust, United Kingdom

103 08:10 **Obesity Does Not Reduce Lymph Node Yield From Oesophagectomy**
Susannah Love; S. Bruce; T.S. Athwal; M. Shackcloth; M. Hartley; R. Page; N. Howes
Liverpool Heart and Chest Hospital, United Kingdom

104 08:20 **Influence of Gender in Surgically Treated Oesophageal Cancer: 5-Years Review of Single Institution**
Bassel Al-Alao; I. Rychlik; H. Parissis; J. McGuigan
Royal Victoria Hospital, United Kingdom

105 08:30 **Prognosis in Perforated Oesophagus - The Factors Influencing Outcome**
A.D. Muir; Rory Beattie; K.L. Booth; B. Al-Alao; J. McGuigan;
Royal Victoria Hospital, United Kingdom

09:10 - 10:00 **Part 1 - Pushing the Boundaries**
Exchange 6/7 *Chair/s: Mr Paul Ridley and Dr Akbar Vohra*

129 09:10 **Preoperative Renal Dysfunction in Heart Transplant Recipients - Time for Change in Practice?**
S. Hosmane; J. Ketheswaran; R. Venkateswaran; S. Williams; P. Waterworth
University Hospital of South Manchester, United Kingdom

130 09:20 **Outcome of Lung Transplantation in Those with a Prolonged Intensive Care Stay**
A.K. Bose; H. Muse; K. Morley; J.H. Dark; S.C. Clark
Freeman Hospital, United Kingdom

131 09:30 **Enhanced Recovery in Cardiac Surgery - Effects on Postoperative Outcome**
C Garratt[2] S. Chaubey[1] E. Fawzy[2] M. Ghosh-Dastidar[1] R. Guha[2] S. Ward[2] J. Desai[1] G. Kunst[2]
1 King's College Hospital NHS Foundation Trust / Department of Cardiothoracic Surgery, United Kingdom; 2 King's College Hospital NHS Foundation Trust / Department of Anaesthetics, United Kingdom

132 09:40 **Is it Time to Adopt Standardized Concentrations of Vasoactive Drugs in Adult Cardiothoracic Intensive Care Nationally? - A National Survey**
Prakash Nanjaiah
Leicester Glenfield Hospital, United Kingdom

133 09:50 **CICU Re-admission After Cardiac Surgery: Improving Outcome?**
Yaseen Moussa; A. Mustafa; S. Lakshmanan; A. Gore; R. Sahajanandan; H. Luckraz
New Cross Hospital, United Kingdom

08:00 - 10:00 **Getting the Best out of your Unit**
Exchange 11 *Chair/s: Mr David O'Regan and Dr Ken Welsh*

08:00 **Principles of Service**
Mr David O'Regan
Consultant Cardiothoracic Surgeon
Leeds Teaching Hospitals NHS Trust, Leeds General Infirmary

08:05 **Understanding and Managing Variation**
Mr Neil Cartwright
Trainee, Yorkshire Rotation, Leeds Teaching Hospitals NHS Trust, Leeds General Infirmary

08:15 **Introducing and Leading Total Quality Management**
Mr Robert George
Trainee, Yorkshire Rotation, Leeds Teaching Hospitals NHS Trust, Leeds General Infirmary

08:25 **Questions**

08:40 **Culture, Communication and Team Work**
Dr Ken Welsh
Consultant Anaesthetist, Leeds Teaching Hospitals NHS Trust, Leeds General Infirmary

08:50 **Designing a Service with the Patient First**
Mr Frank Wells
Consultant Surgeon
Papworth Hospital NHS Trust, Cambridge, UK

09:00 **Questions**

09:15 **Outside in Perspective**
Mr John McKenna
Vice President, Vascutek Terumo

09:25 **Commissioning Quality in the NHS**
Dr James Kingsland OBE
National Clinical Commissioning Network Lead, Department of Health
Senior Partner in General Practice, Chester

09:35 **Questions**

08:00 - 10:00 **Medela Thoracic - VATS and Limited Resections**
Charter 2 **Chair/s: Mr Sion Barnard and Mr Tim Batchelor**

107 08:00 **Video Assisted Thoracoscopic (VATS) Segmentectomy: Equivalent Survival to Lobectomy For Stage IA Lung Cancer**
Harmik Soukiasian; R.J.M. McKenna
Cedars-Sinai Medical Center, USA

108 08:10 **Is a Wedge Resection Inferior to a Lobectomy for Non Small Cell Lung Cancer?**
Michael Poullis; R. Page; M. Shackcloth; S. Woolley; N. Mediratta; T. Theologou
Liverpool Heart and Chest Hospital, United Kingdom

110 08:30 **Can Vats Segmental Resection Provide Diagnosis and Treatment of Solitary Pulmonary Nodules?**
Federico Mazza; S. Sarvananthan; G. Karapanagiotidis; E. Royston; E. Black
Oxford University Hospitals, United Kingdom

111 09:10 **Uniportal Video-Assisted Thoracoscopic Lobectomy: Initial Experience**
Diego Gonzalez-Rivas; R. Fenandez Prado; E. Fieira Costa; M. Delgado Roel; L. Mendez Fernandez; M. De la Torre Bravos; J. Garcia Salcedo
Coruña Hospital, Spain

112 09:20 **Endoscopic (VATS) First Rib Resection for Thoracic Outlet Syndrome**
R.S. George; K. Papagiannopoulos
St James's University Hospital, United Kingdom

113 09:30 **Transition from Open to VATS Lobectomy; Manchester Experience**
Abdul Nasir; P. Krysiak; R. Shah
University Hospital of South Manchester, United Kingdom

114 09:40 **Video-Assisted Lobectomy Programme Initiation - The Dublin Experience**
T. Ni Dhonnchu; J. McCarthy, W Bartosik
Mater Misericordiae University Hospital, Ireland

115 09:50 **Video Assisted Thoracoscopic (VATS) Thymectomy for Myasthenia Gravis: The Oxford Approach**
Sarvananthan; M. Federico; E. Black
Cardiothoracic Surgery Department, Oxford University Hospitals, United Kingdom

08:00 - 10:00 **Edwards Mitral and AF Session**
Exchange 9 *Chair/s: Mr Indepaul Birdi and Mr Peter Braidley and Dr Martin Bewsher*

116 07:55 **Left Atrial Roof. An Alternative Minimal Approach For Mitral Valve Surgery**
G. Cappabianca; N. Gallo; V. Pestrichella; G. Contegiacomo; G. Esposito
Humanitas Gavazzeni Hospital, Italy

117 08:05 **Mitral Valve Repair Feasibility: Determinants of Successful Repair**
Tine Philipsen; B. Paelinck; I.E. Rodrigus
Antwerp University Hospital, Belgium

118 08:15 **Concomitant Atrial Fibrillation Therapy with High Intensity Focused Ultrasound: Single Centre Results**
Sanjay Asopa; S. Bazerbashi; M. Dalrymple-Hay
Derriford Hospital, United Kingdom

119 08:25 **Pressure Reflection in the Pulmonary Circulation in Patients with Severe Mitral Regurgitation is Reduced After Surgery but Indicates Adverse Postoperative Outcome**
C.J. Malm; Per Nivedahl; S.E. Ricksten; H Scherstén; O. Bech-Hanssen
Institute of Medicine at Sahlgrenska Academy, Sweden

120 08:35 **Is Lone Pulmonary Vein Isolation Inferior to Modified Maze for Concomitant Surgical Correction of AF? A Single-Surgeon Retrospective Study**
David Bleetman; A. Lingham; M. Khan; S. Shanmuganathan; R. Deshpande
King's College Hospital, United Kingdom

121 08:45 **Indications and Outcomes Following Redo Tricuspid Valve Surgery**
Reubendra Jeganathan[1] S. Armstrong[2] T. David[2]
1Royal Victoria Hospital, United Kingdom; 2 Toronto General Hospital, Canada

122 08:55 **Totally Thoracoscopic Surgical Ablation: A Single UK Unit Experience**
D. McGowan; M. Baghai; J.A.J. Hyde; M.E. Lewis
Royal Sussex County Hospital, United Kingdom

09:05 **THE ISCHAEMIC MITRAL**

09:05 **When to Intervene with Ischaemic Mitral Regurgitation**
Dr Nick Fletcher
Consultant Cardiac Anaesthetist, Trent Cardiac Centre, Nottingham

09:25 **Principles to Fix the Ischaemic Valve**
Mr Brian Fabri
Consultant Surgeon, Liverpool Heart and Chest Hospital, UK

09:45 **Post Ischaemic Repair - In Theatre How do you Assess Success and when do you Recommend Re-doing the Repair**
Dr Jörg Ender
Direktor, Abteilung für Anästhesiologie und Intensivmedizin II, Leipzig, Germany

08:00 - 16:30 **College of Clinical Perfusion Scientists - Council Meeting**
Exchange 2 Mr Philip Gamston, President

08:00 - 15:00 **Ethicon Wet Lab**
Charter 4

Charter 4 **Sorin Wet Lab**

08:45 - 10:00 **Ethicon Cardiothoracic Forum**
Charter 3/David Geldard MBE room
Chair/s: Mr Andrew Chukwuemeka and Ms Stacey Crump

123 08:45 **Same Day Admission; An Improved Cardiothoracic Surgical Patient Pathway**
B. McAlea; Palanikumar Saravanan; C.A. Humphries; A. Knowles; C. Rozario
Lancashire Cardiac Centre, Victoria Hospital, United Kingdom

124 09:00 **Improving the Efficiency of Discharge, Following Fast-Track Cardiac Surgery**
J.M. Ali; N. Moorjani
Papworth, United Kingdom

125 09:15 **Prospective Clinical Audit of Delays in Patient Discharge Following Elective Cardiac Surgery**
P. Gukop; A. Kourliouros; E.E.J. Smith
St George's Hospital NHS Trust London, United Kingdom

09:30 **From the ward to the Board, Dame Gill Oliver, RCN Fellow**

10:00 - 10:45 Coffee
Exxhibition Hall

10:00 - 10:45 **Thoracic Films**
Charter 2 *Chair: Mr Steven Woolley*

054 10:00 **Structured Light Plethysmography: Assessment of its Role as a Non-Contact Tool to Measure Spirometry and Regional Chest Wall Movement**
I.K. Levai[1] S. Baker[2] W. de Boer[2] W. Hills[2] R. Iles[3] A.S. Coonar[1]
1 Papworth Hospital NHS Foundation Trust, Cambridge University Health Partners, United Kingdom; 2 PneumaCare Ltd., United Kingdom; 3 Addenbrooke's Hospital, Cambridge University Health Partners, United Kingdom

055 10:08 **Supraclavicular Approach for Resection of First Rib. Report of Two Cases**
E. Addae-Boateng; I. Hernandez; L. Socci; A.E. Martin-Ucar
Nottingham University Hospitals NHS Trust, United Kingdom

056 10:16 **Resection of Distal Tracheal Carcinoma in a Patient with Right Sided-Aorta via left Thoracotomy**
L. Socci; M. Kumaran; M. Malik; A.E. Martin-Ucar
Nottingham University Hospitals NHS Trust, United Kingdom

057 10:24 **Single-Incision Video-Assisted Thoracoscopic Left Upper Lobectomy: Technical Details**
Diego Gonzalez-Rivas; R. Fernandez Prado; M. De la Torre Bravos
Minimally Invasive Thoracic Surgery Unit (UCTMI) and Coruña Hospital (CHUAC), Spain

058 10:32 **Single-Staged Laryngotracheal Reconstruction for Idiophatic Tracheal Stenosis**
Abel Gomez-Caro[1] A. Morcillo[2] R. Wins[2] G. Galan[2] L. Molins[1] V. Tarrazona[2]
1 General Thoracic Surgery Department. Hospital Clinic, Spain; 2 General Thoracic Surgery Department. Hospital Clinico de Valencia, Spain

059 10:40 **Video Assisted Thoracoscopic surgery (VATS) Pleurectomy for Mesothelioma**
Kirmani; M. Scarci; R. Rintoul; A. Coonar
Papworth Hospital, United Kingdom

10:00 - 10:45 **Cardiac - Valve Films**
Exchange 9 *Chair: Mr Hunaid Vohra*

126 10:00 **Excision of Calcium Bar from the Posterior Annulus/Reconstruction with Bovine Percardial Patch in a Patient with Mitral Annular Calcification (MAC)**
Hunaid Vohra; L. DeKerchove; D. Glineur; P. Norholmme; G. ElKhoury
Saint Luc University Hospital, Belgium

127 10:10 **Reconstruction of A2/A3 with Bovine Pericardial Patch in a Patient with Anterior Mitral Valve Leaflet Endocarditis**
Hunaid Vohra; L. DeKerchove; D. Glineur; P. Norholmme; G. ElKhoury
Saint Luc University Hospital, Belgium

128 10:20 **Excision of a Right Ventricular Outflow Tract Sarcoma**
Massimo Caputo[1] D. Mukherjee[1] P. de Siena[1] N. Manghat[1] M. Turner[2]
1Bristol Royal Hospital for Children, United Kingdom; 2 Bristol Heart Institute, United Kingdom

10:45 - 12:45 **Sleep Apnoea and Cardiac Surgery**
Exchange 11 *Chair/s: Mr Alex Shipolini, Dr Alexandra M. Hogan and Dr Roger Cordery*

10:45 **Introduction to Sleep Apnoea**
Melanie J. Marshall
Sleep & Respiratory Scientist, University of NSW, Australia

11:00 **The Surgical Patient with Sleep Apnoea**
I. General Overview
Peter J. Venn
Consultant Anaesthetist Queen Victoria Hospital, West Sussex, UK

II. Specific issues for the CT Anaesthetist
Roger Cordery
Consultant CT Anaesthetist Heart Hospital, UCLH and Senior Clinical Lecturer, UCL, UK

11:30 **Bedside Screening for Sleep Apnoea: What the 'Shop-Floor' Doctor Can Do**
David J. McCormack
CT Surgical Trainee (SpR) Barts and the London, NHS Trust, UK

11:40 **Sleep Apnoea and Cardiovascular Disease: Pathogenesis**
Silke Ryan
Consultant in Respiratory and Sleep Medicine, St. Vincent's University Hospital, Dublin and Research Fellow, University College Dublin, Ireland

12:05 **Sleep Apnoea and Coronary Artery Disease: Population and Clinic Based Epidemiology**
Yuksel Peker MD, PhD
Assoc. Prof. University of Gothenburg, Sweden

12:30 **The East London Sleep & Heart Surgery Study: (Incorporating Abstract - Prolonged Length of ITU Stay and Increased Morbidity in CABG Patients)**
Alex Shipolini and Alexandra M. Hogan
Barts and the London, NHS Trust, and Queen Mary University of London, UK.
Additionally AMH: UCLH, NHS Trust, and UCL Institute of Child Health, UK

10:45 - 12:30 **ETHICON Cardiothoracic Forum**
Charter 3/David Geldard MBE room
Chair/s: Mr Chris Munsch and Ms Heather Wyman

10:45 **The Principles of Nursing Practice**
Janet Davies, FRCN
Director of Nursing & Service Delivery, Royal College of Nursing

138 11:15 **Prospective Comparison of Quality of Life in Post Coronary Artery Bypass Grafts Versus Percutaneous Coronary Intervention in Patients from Wales**

Libby Nolan[1] V. Meredith1.57; G. Fabb[1] A. Syed[1] A. Zaidi[1] S. Dorman[1]
1 Morriston Hospital, United Kingdom

139 11:30 **Guidelines for Withdrawal of Ventricular Assist Device Support**

A. Bose; N Wrightson; S. Louw; C. Regnard; S. C. Clark
Freeman Hospital, Newcastle, United Kingdom

140 11:45 **Prophylaxis Against Atrial Fibrillation After Coronary Artery Bypass Grafting - Comparison With European Guidelines**

Ishtiaq Ahmed[1] T. Nagarajan[1] J. Rickard[2] J. Shome[1] M. Hasan[1] M. Debelder[1] S. Hunter[1]
1 James Cook University Hospital, United Kingdom; 2 James Cook University Hospital, United Kingdom

141 12:00 **Implications of Delayed Discharge in a Large Adult Cardiothoracic Centre**

Michael Wilson; G. Niranjan; S.C. Clark
Freeman Hospital, United Kingdom

142 12:15 **Worthwhile or Worthless? - Routine Post-operative Echocardiography After Valve Surgery**

S. Laidler; G. Niranjan; S.C. Clark
Freeman Hospital, Newcastle, United Kingdom

10:45 - 11:55 **Thoracic - Tracheal Surgery and Mesothelioma**
Charter 2 *Chair/s: Mr Mike Cowen and Mr Doug West*

148 10:45 **Outcome of slide tracheoplasty for Long Segment Congenital Tracheo-Bronchial Stenosis**

S. Speggiorin[1] C. Butler[1] T. Dominguez[2] D.J. Roebuk[1] C.A. Mclaren[1] M.J. Elliott[1]
1 Tracheal Team - Great Ormond Street hospital, United Kingdom; 2 Cardiac Intensive Care Unit - Great Ormond Street Hospital, United Kingdom

10:55 **Guest Lecture**
Recent Advances in Tracheal Surgery
Professor Dominique Grunenwald, Paris

149 11:25 **Efficacy at One Year of Lung-Sparing Surgery for Malignant Pleural Mesothelioma**

V. Ambrogi; T.C. Mineo
Thoracic Surgery Tor Vergata University Rome, Italy

150 11:35 **Pleurectomy/Decortication Versus VATS Pleurodesis for Malignant Pleural Mesothelioma**
Eustace Fontaine; M. Diab; C. Menakaya; I. Whittle; M. Shackcloth; M. Poullis; N. Mediratta; M. Carr
Liverpool Heart and Chest Hospital, United Kingdom

151 11:45 **Treatment Related Survival in Localised Malignant Pleural Mesothelioma: Evidence Based Review**
S. Gelvez; M. Scarci; I. Levai; .J. Ziegler; K. Manley; Coonar, A
Papworth Hospital NHS Foundation Trust, United Kingdom

11:55 **The Lilly Tudor Edwards Thoracic Lecture**
Charter 2 *Chair/s: Mr Rajesh Shah and Mr David Waller*

Principles of Thoracic Surgical Oncology - Lessons Learned from the Treatment of Malignant Pleural Mesothelioma
Professor David Sugarbaker
Brigham & Women's Hospital, Department of Thoracic Surgery, Massachusetts, USA

10:45 - 12:30 **Pushing the Boundaries - Have we Exceeded the Strength of our Patients?**
Exchange Auditorium *Chair/s: Mr Jon Anderson, Mr Mike Lewis and Dr Mark Forrest*

152 10:45 **Outcomes of Trans Catheter Aortic Valve replacement in the nonagenarian population - A Bridge too Far?**
B. Chanda[1] R. Attia[2] C.P. Young[2] V.N. Bapat[2] M. Thomas[2] S. Redwood[2] J. Hancock[2] K. Wilson[2]
1 St.Georges Hospital, United Kingdom; 2 St. Thomas' Hospital, United Kingdom

153 10:55 **Functional quality of Life and Survival After Prolonged Intensive Care Unit Stay Following Cardiac Surgery**
Gopal Soppa; C.S. Woodford; M. Yates; R. Shetty; M. Moore; O. Valencia; N. Fletcher; M. Jahangiri
St. George's Hospital, United Kingdom

154 11:05 **Cardiac Surgery: 2 Year Survivals After Prolonged CICU Stay**
M.R. Forrest[1] I. Moideen[1] M. Columb[2] N. O'Keeffe[1]
1 Manchester Royal Infirmary, United Kingdom; 2 University Hospital of South Manchester, United Kingdom

PUSHING THE BOUNDARIES

11:15 **Care of the Elderly - Physiology of the Elderly - Why They Can't Run Marathons**
Professor Paul O'Neill
Consultant Geriatrician
University Hospital South Manchester, UK

11:35 **Why isn't the Frailty Index in the Euroscore?**
Mr David Jenkins
Consultant Surgeon, Papworth Hospital, Cambridge, UK

11:50 **Ethics of Withdrawing Treatment**
Dr Dominic Bell
Consultant Anaesthetist, Leeds General Infirmary

12:05 **How do we make the decision**
Dr Saxon Ridley
Consultant in Anaesthesia and Intensive Care
Glan Clwyd Hospital, Rhyl, North Wales

12:20 **Discussion**

10:45 - 12:30 **Hunterian Lecture and Cardiac Papers**
Exchange 9 *Chair/s: Mr Franco Ciulii, Mr Afzal Zaidi, Professsor John Stanley and Dr Pedro Fernandez-Jimenez*

155 10:45 **Survey of Antibiotic Prophylaxis for Infective Endocarditis (ie) in UK Dental Practices 3-yrs Following NICE: What Dentists do and What Patients Want**
M. Powell-Bowns[1] E. Farmer[2] P. Nanjaih[3] D. Richens[3] R. Jutley[3]
1 University of Dundee, United Kingdom; 2 University of Nottingham, United Kingdom; 3 Trent Cardiac Centre, United Kingdom

156 10:55 **Management of Cardiac Patients with Increased Surgical Risk. Is Obtaining a Second Opinion Justified?**
Alan Soo; O.C. Nzewi; A.N.J. Graham
Royal Victoria Hospital, United Kingdom

157 11:05 **Effect of Postoperative Non-Invasive Ventilation in Patients undergoing Coronary Artery Bypass Grafting (CABG)**
Emad Al Jaaly[1] F. Fiorentino[2] O. Mangoush[3] B. Reeves[4] G.D. Angelini[2] P. Ind[2] S. Kemp[1] R. Shiner[2]
1 Hammersmith Hospital/ Imperial College Healthcare NHS Trust, United Kingdom; 2 Hammersmith Hospital/ Imperial College, United Kingdom; 3 Bengazi Medical Centre, United Kingdom; 4 Bristol Royal Infirmary/ University of Bristol, United Kingdom

158 11:15 **Predictors of Total Morbidity Burden on Days 3, 5 and 8 After Cardiac Surgery**
J. Sanders; J. Cooper; M.G. Mythen; H.E. Montgomery
University College London, United Kingdom

159 11:20 **Pre-Surgical Wash of the Patients Reduces the Surgical Site Infections in Cardiac Surgery**
Anna Coipell[1] S. Ambekar[2] S. Ibrahim[2] D. McCormack[2] A. Shipolini[2]
1 Barts and the London NHS Trust, United Kingdom; 2 London Chest Hospital NHS Trust, United Kingdom

160 11:30 **A Pilot Randomised Control Trial, in ICU Patients, Comparing Seven Days vs Two Days Treatment With Antibiotics to Treat Infection of Unknown Origin**
Nigel Scawn[1] D. Saul[1] D. Pathak[1] B. Matata[1] I. Kemp[1] R. Stables[1] S. Lane[2] A. Haycox[2]
1 Liverpool Heart and Chest Hospital, United Kingdom; 2 University of Liverpool, United Kingdom

161 11:40 **Oxidative Stress Injury in Type 2 Diabetics Undergoing Coronary Artery Bypass Surgery**
Ashvini Menon[1] E. Mulla[2] S. Hughes[2] J. Mascaro[1] M.J. Stevens[2] R.S. Bonser[1]
1 University Hospital Birmingham, United Kingdom; 2 Birmingham University, United Kingdom

162 11:50 **Impact of Acute Primary PCI Service Triaged by Emergency Medical Services on a Cardiac ITU**
Moronke Abiodun Noah[1] S. Kaul[2] L. Kuppurao[2]
1 University Hospitals of Leicester NHS trust, United Kingdom; 2 Royal Brompton and Harefield NHS Trust, United Kingdom

12:05 - 12:30 Exchange 9 **Hunterian Lecture: Metabolic and Hormonal Substrate Support in Cardiac surgery**
Mr Aaron Ranasinghe
Chair/s: Mr Franco Ciulli and Mr Afzal Zaidi

10:45 - 12:30 Exchange 10 **Thoracic ITU - Controversies of Oxygen and Water**
Chair/s: Mr Sion Barnard and Dr Mark Patrick

163 10:45 **The Impact of Admission to the Intensive Care Unit After Thoracic Surgery**
Louise Kenny; S.A. Stamenkovic; S. Barnard; J. Forty; M. Prabhu; S. Somisetty; S.C. Clark
Freeman Hospital, United Kingdom

10:55 **Acute Reperfusion Injury of the Lung**
Dr Peter Slinger
Consultant Cardiothoracic Anaesthetist, Toronto General Hospital, Canada

11:15 **Fluid Therapy - Do We Give Enough?**
Dr Al Perrino
Anaestheologist, Yale, New Haven Hospital, USA

11:35 **Oxygen therapy - Too Much is Bad**
Dr Andrew Lumb
Consultant Thoracic Anaesthetist, Leeds General Infirmary

11:55 **Role of Early of Elective Tracheostomy in Thoracic Patients**
Dr Andrew Roscoe
Associate Professor of Anaesthesiology, Toronto General Hospital, Toronto, Canada

12:10 **Discussion**

12:20 **The Assessment of Risk for Cardiothoracic Intensive Care (ARCTIC) Project - Update 2012**
Dr Alistair Macfie
Consultant Anaesthetist, Glasgow
Dr Stephen Webb
Papworth Hospital, Cambridge, UK
Lucy Lloyd-Scott
National Audit Programme Manager
ICNARC

12:30 - 13:30 **Student Poster Presentations**
Exchange 6/7 *Organised by Mr David McCormack*

12:30 - 13:30 Lunch
Exxhibition Hall

12:30 - 13:30 **Thoracic Films**
Charter 2 *Chair: Mr Kandadi Rammohan*

054 12:40 **Structured Light Plethysmography: Assessment of its Role as a Non-Contact tool to Measure Spirometry and Regional Chest Wall Movement**
I.K. Levai[1] S. Baker[2] W. de Boer[2] W. Hills[2] R. Iles[3] A.S. Coonar[1]
1 Papworth Hospital NHS Foundation Trust, Cambridge University Health Partners, United Kingdom; 2 PneumaCare Ltd., United Kingdom;

3 Addenbrooke's Hospital, Cambridge University Health Partners, United Kingdom

055 12:50 **Supraclavicular Approach for Resection of First Rib. Report of Two Cases**

E. Addae-Boateng; I. Hernandez; L. Socci; A.E. Martin-Ucar
Nottingham university Hospitals NHS Trust, United Kingdom

056 13:00 **Resection of Distal Tracheal Carcinoma in a Patient with Right Sided-Aorta via Left Thoracotomy**

L. Socci; M. Kumaran; M. Malik; A.E. Martin-Ucar
Nottingham University Hospitals NHS Trust, United Kingdom

057 13:10 **Single-Incision Video-Assisted Thoracoscopic Left Upper Lobectomy: Technical Details**

Diego Gonzalez-Rivas; R. Fernandez Prado; M. De la Torre Bravos
Minimally Invasive Thoracic Surgery Unit (UCTMI) and Coruña Hospital (CHUAC), Spain

058 13:20 **Single-Staged Laryngotracheal Reconstruction for Idiophatic Tracheal Stenosis**

Abel Gomez-Caro[1] A. Morcillo[2] R. Wins[2] G. Galan[2] L. Molins[1] V. Tarrazona[2]
1 General Thoracic Surgery Department. Hospital Clinic, Spain; 2 General Thoracic Surgery Department. Hospital Clinico de Valencia, Spain

059 13:28 **Video assisted Thoracoscopic Surgery (VATS) Pleurectomy for Mesothelioma**

Kirmani; M. Scarci; R. Rintoul; A. Coonar
Papworth Hospital, United Kingdom

12:30 - 13:30 **Cardiac - Aortic Films**
Exchange 9 *Chair: Mr Hunaid Vohra*

164 12:40 **The 'Ross in Valsalva' Operation**

Hunaid Vohra; L. DeKerchove; D. Glineur; P. Norholmme; G. ElKhoury
Saint Luc University Hospital, Belgium

165 12:50 **Bi-leaflet and Commissural Reconstruction with Pericardial Patch in a Stenosed Type I Bicuspid Aortic Valve**

Hunaid Vohra; L. DeKerchove; D. Glineur; P. Norholmme; G. ElKhoury
Saint-Luc University Hospital, Belgium

166 13:00 **David Operation, Leaflet Repair and Raphe Management in a Type I Restricted Bicuspid Aortic Valve**
Hunaid Vohra; L. DeKerchove; D. Glineur; P. Norholmme; G. ElKhoury
Saint-Luc University Hospital, Belgium

167 13:10 **Surgical Techniques of Intercostal Artey Revascularization During Open Thoracoabdominal Aneurysm Repair**
Mohamad Bashir; M. Field; M. Kuduvalli; A. Oo
Institute of Cardiovascular Medicine and Science (ICMS), Thoracic Aortic Aneurysm Service, Liverpool, United Kingdom

168 13:20 **A Novel And Safe Approach To Complex Aortic Surgery**
John Lu; M. Shajar; J. Campbell; S. Hammond; S. Naik
Trent Cardiac Centre, United Kingdom

14:00 - 15:00 **Exhibitors Meeting**
Exchange 6/7 *Chair/s: Mr Ian Wilson, Miss Tilly Mitchell and Dr Niall O'Keeffe*

13:30 - 16:30 **Heart Failure**
Exchange Auditorium *Chair/s: Professor John Pepper , Dr Donna Greenhalgh and Dr Marco Ranucci*

169 13:30 **Equivalent Long Term Survival of Heart Transplant Patients Receiving Resuscitated Donor Hearts**
Sharath Hosmane; M. Devbhandari; J. Salaie; S. Williams; R. Venkateswaran; N. Yonan
University Hospital of South Manchester, United Kingdom

170 13:40 **Personalised Surgical Repair of Left Ventricle Aneurysm with Computer Assisted Ventricular Engineering**
István Hartyánszky[1] A.T. Tóth[2] B.B. Berta[2] M.P. Polós[1] G.V. Veres[1] B.M. Merkely[2] F.H. Horkay[1] J.P. Pepper[3]
1 Semmelweis University, Department Cardiac Surgery, Hungary; 2 Semmelweis University, Heart Center, Budapest, Hungary; 3 Royal Brompton and Harefield NHS Trust, London, United Kingdom

171 13:50 **Concomitant Mitral Valve Surgery in Patients Undergoing Surgical Ventricular Restoration for Ischemic Cardiomyopathy**
Reubendra Jeganathan[1] M. Meganti[2] V. Rao[2]
1 Royal Victoria Hospital, United Kingdom; 2 Toronto General Hospital, Canada

172 14:00 **Cost-Benefit Analysis of MCS Intervention in Patients with Advanced End-Stage Heart Failure**
Tara Ni Dhonnchu; R. Regan; J. McCarthy
Mater Misericordiae University Hospital, Ireland

173 14:10 **Mid-Term Results of 'Cut and Transfer' Technique, Posterior Papillary Muscle Relocation and LV Plication in Patients with Ischemic Cardiomyopathy**
G. Cappabianca; N. Gallo; V. Pestrichella; G. Contegiacomo; G. Esposito
Humanitas Gavazzeni Hospital, Italy

174 14:20 **Optimized Right Ventricle Function Prior to Left Ventricular Assist Device Implantation - Honeymoon Period or Sustainable Success?**
T.A. Butt; M.S. Yousafzai; F. Oezalp; A. Siddique; D. O'Leary; C. Roysam; G. MacGowan; T. Pillay; S. Schueler
Newcastle upon Tyne Hospitals NHS Foundation Trust, United Kingdom

Left and Right Heart Failure: Optimising the Expected and Coping with the Unexpected

14:30 **Recruitable and Recoverable Myocardium - How do you Predict?**
Dr Mathias Schmitt
Consultant Cardiologist, University Hospital of South Manchester

14:50 **Management of Perioperative Right Heart Failure**
Dr Jonathan Leff
Chief, Cardiothoracic Anesthesia, Montefiore Medical Center, USA

15:10 **Surgical Management of Heart Failure**
Professor Andrew Wechsler
Chair, Department of Cardiothoracic Surgery Drexel University College of Medicine, Philadelphia, USA

15:30 **Inotropic Management of Heart Failure**
Dr Alain Vuylsteke
Consultant Intensivist, Papworth Hospital, Cambridge

15:50 **Building a New Heart**
Dr Doris Taylor
Director, Regenerative Medicine, Texas Heart Institute, USA

16:10 **Discussion**

13:30 - 16:55 **ETHICON Cardiothoracic Forum**
Charter 3/David Geldard MBE room
Chair/s: Mr Stephen Clark Consultant Cardiothoracic Surgeon, Freeman Hospital, Newcastle upon Tyne and Ms Helen Baty, Senior Nurse Practitioner, Freeman Hospital, Newcastle upon Tyne

13:30 **Introductory Remarks. Ms Tara Bartley, SCTS Nursing Representative**

13:35 **Developing an Advanced Nurse Practitioner service at Duke University, USA**
Jill Engel
Director of Advanced Practice for the Duke Heart Center at Duke University Hospital

175 14:05 **Improving Early Medical Management and Transfer of Patients with Acute Aortic Syndromes: Role of an Aortic Advanced Nurse Practitioner**
M. Roberts; J. Tan; V. Fretwell; M. Field; M. Kuduvalli; A. Oo
Liverpool Heart and Chest Hospital, United Kingdom

176 14:20 **Patients' Perceptions of the Cardiothoracic Advanced Nurse Practitioner Role**
Jane Wild; C. Taylor; G.J. Cooper
Northern General Hospital, United Kingdom

177 14:35 **The Impact of the Cardiothoracic Ward Nurse Practitioner Upon Cardiothoracic Patient Care**
Dawn Southey; H. Luckraz; E. Lengyel; J. Gunn; K. Raybould; S. Sherwood; H. Flavell; J.S. Billing; W. Pugsley
New Cross Hospital, Wolverhampton, United Kingdom

178 14:50 **The Impact of Cardiothoracic Advanced Nurse Practitioners on the Readmission Rate to Level 3 Care**
Carol Barlow; G.J. Cooper
Northern General Hospital, United Kingdom

179 15:05 **Nurse Practitioner or Junior Doctor - Which is Best? A Qualitative Retrospective Review**
S Laidler; R.E. Macfarlane; N.J. Rutherford
Freeman Hospital , United Kingdom

180 15:20 **Opening Chests and Minds**
L.S. Fabb; F. Bhatti
Morriston, Swansea, United Kingdom

15:35 **I can't Remember I had a Baby - Life with a New Born and a Heartware LVAD; Nursing Issues and the Patient Experience**
Ms Stevie Anita Caffrey
Patient, University Hospitals of South Manchester

Introduced by Mr Shishir Kore
Specialist Nurse Organ Retrieval/Ventricular Assist Device Coordinator
University Hospitals of South Manchester

181 15:55 **Mini-Videoclips About Endoscopic Vein Harvesting - Details May Be Crucial For Uncomplicated Harvesting**
D. T Inderbitzin; B. Winkler; P. Matt; M. Grapow; F. Rueter; O. Reuthebuch; F.S. Eckstein
Clinic for Cardiac Surgery Basel-Bern, University Hospital Basel, Switzerland

182 16:10 **Radial Artery Harvesting. What Can Go Wrong?**
J. Broughton; S. Kendall; T. Tiyenga; J. Ferguson
James Cook University Hospital, United Kingdom

183 16:25 **Development of a Left Heart Bypass Circuit for Patients Requiring Thoracoabdominal Aneurysm Repair: Perspectives from the Perfusionist Department**
K. Day; M. Field; M. Kuduvalli; M. Desmond; A. Oo; P. Ashcroft
Liverpool Heart and Chest Hospital, United Kingdom

184 16:40 **The Cardiac Surgical Care Practitioner: An Evaluation of Surgical Site Infections in the Leg**
D. McCormack; C. Tennyson; P. Lohrmann; P. Vulliamy
London Chest Hospital, United Kingdom

13:30 - 16:30 **Thoracic - Recovery and Pre-op Assessment**
Charter 2 *Chair/s: Mr Richard Milton and Dr Andrew Lumb*

185 13:30 **Does CT Accurately Predict Whether Lung Fissures are Complete or Fused at Operation?**
K. Nowak[1] O. Lazoura[2] W. Karenovics[2] M. Dusmet[2] S. Padley[2] S.J. Jordan[2]
1 Royal Brompton and Harefield NHS Trust and Mannheim University Medical Centre, United Kingdom; 2 Royal Brompton Hospital, United Kingdom

186 13:35 **Does Routine Preoperative Pet CT Scan for Lung Cancer Influence Long Term Survival?**
V. Srivastava; M. Hassan; S. Rogers; M.N. Bittar; A.J. Duncan; J. Zacharias
Victoria Hospital, Blackpool, United Kingdom

187 13:40 **The Impact of Pre-Operative Pulmonary Physiotherapy in Thoracic Surgery**
G. Thomas; S. Jones; I.R.A. Goldsmith
ABM University Health Board, Morriston Hospital, United Kingdom

188 13:45 **When Should we not Operate on Patients with Pleural Effusions?**
Vasudev Pai[1] C.K. Tai[1] E. Elshaikh[2] S.K. Kolvekar[1]
1 Heart Hospital, UCLH, United Kingdom; 2 Heart hospital; UCLH, United Kingdom

189 13:50 **enhanced recovery after thoracic surgery: outcomes of consecutive patients undergoing lobectomy**
Tim Batchelor; R.N. Wotton; N.J. Rasburn; C.L. Evans; G. Casali; D.G. West; F.J. Collins
Bristol Royal Infirmary, United Kingdom

13:55 **Does the Anaesthetic Make a Difference to Outcome in Thoracic Surgery?**
Dr David Duthie, Cardiothoracic Anaesthetist
Leeds General Infirmary

190 14:20 **Enhanced Recovery after Pulmonary Surgery Protocols Help Reduce use of Resources Without Compromising Outcomes**
L. Creedon; M. Hagan; L. Socci; E. Internullo; D. Raffle; A.E. Martin-Ucar
Nottingham University Hospitals NHS Trust, United Kingdom

191 14:50 **Troponin-I Changes After Thoracic Surgery and its Lack of Association with Clinical Evidence of Myocardial Injury**
Mustafa Zakkar; M. Kovzel; C. Tan; I. Hunt
St. George's Hospital, United Kingdom

192 15:00 **Timing of Chest X-Ray Following Thorascopic Sympathectomy can Avoid Unnecessary Drain Placement and Radiation Exposure**
Beattie; R. Beattie; M. Jones
Royal Victoria Hospital, United Kingdom

193 15:10 **Is a Progressive Care Unit the Future in Thoracic Surgery?**
Mandy Mckee; L. Bell
Royal Victoria Hospital, United Kingdom

194 15:20 **Does Explorative Thoracotomy for Non-Small Cell Lung Cancer Adversely Affect Patients's Outcome Postoperatively?**
A. Alzetani; J. Rigby; A. Lea; S. Ghosh
University Hospital North Staffs NHS Trust, United Kingdom

195 15:30 **Surgical Management of Pleural Empyema in the Very Elderly**
M. Schweigert[1] A. Dubecz[1] R.J. Stadlhuber[1] M. Beron[1] D. Oefner[2] H.J. Stein[1]
1 Department of Thoracic Surgery, Klinikum Nuremberg Nord, Germany; 2 Department of Surgery, Salzburger Landeskrankenhaus, Paracelsus Medical University Salzburg, Austria

196 15:40 **Pulmonary Lobectomy in Octogenarians: A 9 year Experience in a Single Centre**
Louise Kenny; B. Nyawo; S. Stamenkovic; S. Barnard; S. Clark; G. Sarwar; J. Forty
Freeman Hospital, United Kingdom

197 15:50 **Is lobectomy for Non Small Cell Lung Cancer (NSCLC) Worth the Risk in Octogenarians? A Case Control Study**

M. Scarci; T. Routledge; J. King; L. Lang-Lazdunski; K. Harrison-Phipps; J.E. Pilling
Guys Hospital, United Kingdom

198 16:00 **Repair of Pectus Excavatum Does not Improve Early Chest Wall Function**

U.B.V. Naidu[1] A. Aliverti[2] A.F. Motta[2] S. Moriconi[2] N.J. Acosta Canon[3] K. Parker[1] V. Raja[3] P.B. Rajesh[1]
1 Heart of England NHS Foundation Trust, United Kingdom; 2 Politecnico di Milano, Italy; 3 University of Warwick, United Kingdom

199 16:10 **Has the National Cancer Control Program for Lung Cancer Influenced the Pathological Stage of Lung Resection?**

David Healy; A. Raza; C. Redmond; M. Tolan
Dublin Academic Medical Centre, Ireland

13:30 - 16:30 **Cardiac - Aortic Surgery**
Exchange 9 *Chair/s: Professor Malcolm Underwood, Mr James Kuo and Dr Andrew Roscoe*

200 13:30 **Functional Imaging in Aortic Aneurysms: Determining the Biological Correlates of Position Emission Tomography Tracer (18F-FDG) in Aortic Aneurysms**

R.Q. Attia[1] A. Smith[1] A.S. Patel[1] C.P. Young[2] V.N. Bapat[2] P. Taylor[1] M. Waltham1
1 Kings College London BHF Centre of Excellence and NIHR Biomedical Research Centre at King's Health P, United Kingdom; 2 Department of Cardiovascular Surgery, Guy's and St Thomas' Hospital, United Kingdom

201 13:40 **Subspecialisation of Aortic Surgery Improves Outcome Following Acute Type a Aortic Dissection**

Deborah Harrington; M. Field; M. Kuduvalli; A. Oo
Liverpool Heart and Chest Hospital, United Kingdom

202 13:50 **External Aortic Root Support Avoids Myocardial Ischaemia and Embolic Risk and Minimises Cardiopulmonary Bypass and Blood Product Requirements**

Tom Treasure[1] S. Crowe[1] B. Lees[2] K.M.J. Chan[2] A.M. Ranasinghe[3] R. Attia[4] T. Golesworthy[5] J. Pepper[2]
1 Clinical Operational Research Unit UCL, United Kingdom; 2 Royal Brompton Hospital and Imperial College London, United Kingdom; 3 University of Birmingham, School of Clinical and Experimental Medicine and University Hospitals Birmingham, United Kingdom; 4 Guy's and St Thomas' Hospitals, United Kingdom; 5 Exstent Ltd, Tewkesbury, UK, United Kingdom

203 14:00 **Hybrid Two Stage Treatment of Extensive De Bakey Type I Acute Aortic Dissections: Mid-Term Results of the Lupiae Technique**
G. Cappabianca; N. Gallo; E. Pestrichella; G. Contegiacomo; G. Esposito
Humanitas Gavazzeni Hospital, Italy

204 14:10 **High Volume Practice and Regular Follow-Up Reduces Mortality and Morbidity of Elective/Urgent Aortic Root Replacement**
G.K.R. Soppa; J.Y. Afoke; J.P. van Besouw; M. Jahangiri
St. George's Hospital, United Kingdom

205 14:20 **CT Coronary Angiography is a Viable Alternative to Coronary Angiography as investigation of coronary status in elective aneurysm surgery**
E. Lim[1] J. Yap[2]
1 Royal Brompton and Harefield NHS Trust, United Kingdom; 2 Heart Hospital, United Kingdom

206 14:30 **Experience with the Jotec-Evita Open Plus Hybrid Stent Graft During Arch Surgery**
Mohamad Bashir; M. Field; M. Kuduvalli; A. Oo
Institute of Cardiovascular Medicine & Science (ICMS), Thoracic Aortic Aneurysm Service, Liverpool H, United Kingdom

207 14:40 **Hybrid Endoprosthesis for Chronic Aortic Dissection and Thoracic Aneurysm: Early Experience With E-Vita Open Plus**
Jean-Philippe Verhoye; V.G. Ruggieri; E. Flécher; M. Harmouche; X. Beneux; J.F. Heautot; D. Boulmier; T. Langanay; H. Corbineau; A. Leguerrier
Rennes University Hospital, France

208 14:50 **Surgery for Type A Aortic Dissection - The more I practice the luckier I get??**
A. Bryan; P. Narayan; B. Reeves
Bristol Royal Infirmary, United Kingdom

209 15:00 **Diagnostic Delays in Type A Aortic Dissection**
A Ranasinghe; UK-TCRC
University of Birmingham, United Kingdom

210 15:10 **Finite Element Modelling of Intramural Haematoma in the Thoracic Aorta - Size Does Matter**
Priya Sastry[1] R.A. Zhao[2] M.L. Field[3] D. Richens[4]
1 Papworth Hospital, United Kingdom; 2 AZ Engineering and Science, San Jose, USA; 3 Institute of Cardiovascular Medicine, Thoracic Aortic Aneurysm Service, Liverpool Heart and Chest Ho, United Kingdom; 4 Trent Cardiac Centre, Nottingham University Hospitals NHS Trust, United Kingdom

211 15:20 **Dilatation of the Remaining Aorta Following Aortic Valve or Root Replacement in Patients with Bicuspid Aortic Valve**
Nada Abdulkareem; S.G. Jones; O. Valencia; A. Alassar; M. Jahangiri
St. George's University of London, United Kingdom

Future of Thoraco-Abdominal Surgery - Optimization of Cerebral and Spinal Perfusion

15:30 **Cerebral Perfusion**
Professor Thoralf Sundt III

15:50 **Spinal Cord Protection during Aortic Surgery**
Dr Mike Desmond, Liverpool Cardiothoracic Centre, UK

16:10 **The Future of Thoraco Abdominal Aortic Surgery**
Mr Aung Oo, Liverpoool Cardiothoracic Centre, UK

16:20 **Discussion**

15:00 - 16:00 **Scholarship Meeting**
Organisers 2 *Chair/s: Mr Chris Munsch and Mr Graham Cooper*

16:45 - 17:15 **Presentation Grading Meeting**
Organisers 2 *Chair/s: Mr Simon Kendall, Mr Ian Wilson, Dr Donna Greenhalgh, Dr Niall O'Keeffe, Ms Tara Bartley and Ms Christina Bannister*

001 The Use and Impact of Transoesophageal Echocardiography in Aortic Valve Surgery - A Prospective, Multicentre Study

Authors: P. Saravanan[1] A. Bendon[1] K. R. Vege[1] J. Hillier[2] R. Bateman[2] J. MacKay[3] B. Parizkova[3]

1 Lancashire Cardiac Centre, Victoria Hospital, United Kingdom; 2 Bristol Royal Infirmary, United Kingdom; 3 Papworth Hospital, United Kingdom

Objectives: Usage of intraoperative transoesophageal echocardiography (TOE) for aortic valve replacement varies throughout the UK. This study measured the use and the impact of intraoperative TOE for aortic valve surgery in three UK cardiac centres (Centres 1, 2 and 3).

Methods: Approval was obtained from the respective research departments as multicentre service evaluation project. Data on the use of TOE and its impact was prospectively assessed over a 12 month period from April 2008 on all patients undergoing aortic valve surgery either as a standalone or combined procedure. Impact of TOE was grouped into three categories i. alteration to surgical procedure - new or abandoned or revised procedures ii. aid to medical management - guidance to inotrope or fluid therapy iii. aid to surgical procedure - guidance to cannulae and balloon pump placement and deairing. The impact was recorded by the anaesthetist at the end of the procedure.

Results: Data was collected from 1069 patients with, 26%, 13% and 61% of cases from Centres 1, 2 and 3 respectively. Preoperative echocardiography was available in 94.4% of patients (n=1009). Intraoperative TOE use ranged from 63% at Centre 3 to 99% at Centre 1. Surgical procedure was altered in 12.5% of patients (n=135) and in 21.7%, 11.5% and 8.9% (n= 60, 16 and 58) patients in Centres 1, 2 and 3 respectively. TOE aided medical management and surgical procedure in 54.6% and 56.9% of patients respectively. Aortic valve was not replaced in 26 patients and redone in 7 patients. New procedure was performed in 47 patients such as mitral valve replacement, ASD closure and ascending aorta replacement. Other scheduled procedure such as tricuspid, mitral and aortic root replacement was not done in 60 patients.

Conclusions: TOE had a major impact on the perioperative management of patients undergoing aortic valve surgery suggesting that this should now be standard practice.

002 Should Minimally Invasive Aortic Valve Surgery (MIAVR) be the Default Surgical Procedure for all First Time Aortic Valve Replacements?

Authors: Rizwan Attia; J.C. Roxburgh; C.P. Young

Guy's and St Thomas' Hospital, United Kingdom

Objectives: MIAVR has been practiced for a number of years, however it has been particularly adapted recently since the advent of TAVI. We investigated the outcomes following MIAVR compared to conventional aortic valve replacement (CAVR).

Methods: 189 consecutive patients undergoing first time isolated AVR over 6 years under one surgeon were studied. Prospectively collected data were analysed on 76 patients undergoing MIAVR (partial J sternotomy) compared to 113 patients undergoing CAVR. Univariate and multivariate analyses were performed to identify predictors of outcome.

Results: MIAVR were selected due to multiple high co-morbidities (median age of 77 vs. 67years, incidence of COPD 24/76(31.6%) vs. 10/113 (9.7%, p0.04) and extra-cardiac arteriopathy 17/76 (22.3%) vs. 7/113(6.1%) (p0.03). MIAVR had higher mean Logistic EuroSCORE 14.6% vs. CAVR 10.6%, p=0.01. Despite this there was no in-hospital mortality in the MIAVR group vs. 4.4% in CAVR, p=0.01. The incidence of COPD was 31.6% yet there were no cases of chest sepsis vs. 6.1% for CAVR, p0.02. MIAVR was associated with reduced incidence of allogenic blood transfusion (14.5% vs. 30%, p0.001), superficial wound infections (0% vs. 5.3%,p0.02) and there were no strokes. On multivariate analysis predictors for blood transfusion were increasing age (OR=2.2), prolonged bypass time (1.1) and CAVR (OR=2.3).There were no differences hospital stay or other major complications.There were no differences in the mean bypass time or cross clamp times.

Conclusions: We are increasingly using MIAVR for high-risk patients with multiple co-morbidities, targeting elderly patients with poor respiratory reserve. The technique works well in obese patients (largest in our series 170kgs). Future use of this technique lends itself to sutureless valve technology and specially those at high risk of chest infections, bleeding diathesis and wound problems. There is increasing evidence for MIAVR to benefit all patients with isolated aortic valve disease.

003 Initial Experience of the Sutureless 'Percevals' Aortic Valve Replacement

Authors: R. Ibe; K. Baig; A.O. Chukwuemeka

Department of Cardiothoracic Surgery, Imperial College London, United Kingdom

Objectives: We report the use of a novel self-anchoring bovine pericardial bioprosthesis (Perceval S, Sorin S.p.A. Italy) in a high-risk patient group undergoing aortic valve replacement.

Methods: 7 patients with severe aortic stenosis underwent Aortic Valve Replacement over a 6 month period. 4 of these patients had concomitant Coronary Artery Bypass Grafting. Mean age was 85.6 years +/- 5.9, in the group of 5 females and 2 males. The mean Logistic Euroscore was 20.9 +/- 13.8. All patients underwent intra-operative TOE and post implantation TTE at 6 weeks.

Results: No in-hospital mortality was observed. Prosthesis sizes varied - 3 size S, 3 size M and 1 size L were implanted. Mean aortic cross clamp time was 44.1min +/- 10.4, mean bypass time was 59.4min +/- 11.6. Pre-operative mean transvalvular gradient was 38.1mmHg +/- 6.9. Post-operative peak transvalvular gradient ranged from nil to 20mmHg on TTE. No paraprosthetic leaks, central regurgitation, or valve migration were evident on post-operative TTE.

Conclusions: This new self-expanding sutureless valve is shown to be safe. Short-term follow-up demonstrates excellent haemodynamics. It has the potential for use in patients requiring aortic valve replacement, with or without a concomitant cardiac procedure, with shorter bypass and cross-clamp times thereby reducing associated operative risks and providing an alternative to TAVI for certain high-risk patients. Medium and long-term data are awaited.

004 Impact of Pre-Operative Symptoms on Outcome After Valve Sparing Surgery for Severe Aortic Insufficiency: Is it Time to Re-consider the Indications?

Authors: Hunaid Vohra; R.N. Whistance; L. DeKerchove; D. Glineur; P. Noirhomme; G. ElKhoury

Saint Luc University Hospital, Belgium

Objective: To evaluate the effect of pre-operative symptoms on long-term survival and valve re-intervention in patients undergoing valve sparing surgery (AVr) for severe degenerative aortic insufficiency (AI).

Methods: Between March 1996 and June 2010, 274 patients underwent AVr for severe AI, out of which 77 were performed in asymptomatic patients (Group I) and 197 were performed in symptomatic patients (Group II). Patients in group I were younger (43.9±15.0 vs 54.1±15.5 years; p=0.0001) with a higher proportion of bicuspid valves (n=40, 51.9% vs n=68, 30.4%); p=0.008). Group II had more patients with impaired LV (n=35, 17.7% vs n=5, 6.4%: p=0.02). Mean follow-up for group I and group II was 43.0±34.0 and 61.3±39.5 months, respectively.

Results: There was no in-hospital mortality. Overall, leaflet repair and re-implantation was higher in Group I (p<0.001 and p=0.002, respectively). There was no difference in early complications but during follow-up atrial fibrillation was higher in Group II (p=0.03). There were 10 late cardiac deaths, all in group II (p=0.04). Overall 10-year cardiac survival was better in Group I (100% vs 77.3±8.6%) but not significant (p=0.1). At 10 years, freedom from AV re-intervention was 81.8±7.1% vs 89.0±2.8% (p=0.36), in Group I and II, respectively. In the whole cohort, 10-year freedom from AV re-intervention was greater in patients with EDD<60mm (90.0±7.6% vs 76.3±5.5%; p=0.003). Multivariate analysis for overall survival identified increasing age as the only independent risk factor (p=0.03). The incidence of valve-related complications was similar.

Conclusions: In asymptomatic patients with severe degenerative AI, AVr is associated with excellent long-term outcome while symptoms are associated with reduced long-term survival. In dilated LV, freedom from re-operation is lower. We recommend early AVr in experienced centres.

005 Redo Aortic Valve Replacement: The Sutureless Approach

Authors: Giuseppe Santarpino; S. Pfeiffer; G. Concistré; T. Fischlein

Klinikum Nürnberg - Department of Cardiac Surgery, Germany

Objective: The benefit of sutureless surgical aortic valve replacement (AVR) with a fast and ease implantation has been outlined recently. Therefore, we evaluated a subcohort of patients scheduled for surgical AVR as a redo procedure.

Methods: Patients who underwent sutureless AVR from September 2010 to November 2011 at our institution as a redo procedure were included in the study. For these patients, preoperative, periprocedural and echocardiographic parameters as well as clinical outcome were analyzed.

Results: Out of 81 patients receiving a sutureless Sorin Perceval S valve, 13 (mean age 75.1±5.6, 9 male, 4 female) underwent redo cardiac surgery. The primary surgery was AVR with a biological prosthesis in 6 (46%) and CABG in 7 (54%) patients. Logistic Euroscore was 20.2±11.5. The surgical approach was a full sternotomy, the mean implanted valve size was 23.5±1.3mm (previous valve size 20.7±1.6, p=0.007, n = 6). X-clamp time in isolated AVR was 31.7±6.9 minutes and implantation time for all valves was 8.0±2.3 min. Postoperatively we recorded: ICU stay 3.3±2.3 days, 1 TIA and 1 need for pacemaker implantation, no hospital death. After a mean follow up of 7.8±4.4 months, we recorded no deaths and no adverse events with an associated NYHA class 1.1±0.3. The echocardiographic control showed no patients with intra- or para-prosthetic leakage and a mean gradient of 11.8±3.6 mmHg.

Conclusions: Perceval sutureless AVR facilitates a fast and safe technique, even in a group of high risk redo surgical patients. Hemodynamic performance of the valve is good with excellent clinical recovery after 6 months. Although the number of the studied patients is small, results are encouraging and in favor of the use of sutureless valves in the setting of redo surgery for aortic valve disease.

006 Pulmonary Metastasectomy for Bone and Soft Tissue Sarcoma: Published Five-Year Survival Compared with Thames Cancer Registry Data 1985-2004

Authors: Tom Treasure[1] F. Fiorentino[2] M. Scarci[1] H. Moller[3] M. Utley[1]

1 Clinical Operational Research Unit UCL, United Kingdom; 2 Imperial College, United Kingdom; 3 KCL Thames Cancer Registry, United Kingdom

Objective: We compare survival data following pulmonary metastasectomy for bone sarcoma (BS) and soft tissue sarcoma (STS) with survival amongst Thames Cancer Registry (TCR) patients who had metastatic disease at primary diagnosis.

Methods: The literature was searched from 1950 to June 2011 for reports of pulmonary metastasectomy for sarcoma. Data on patient selection, the surgery performed, and outcomes were extracted. Five year survival was compared with TCR data for patients with synchronous metastases.

Results: Fourteen surgical follow up studies provided outcomes amongst 1230 patients following a 1st pulmonary metastasectomy (sequential thoracotomies count as one episode) and 3 studies reported data following 2nd and subsequent metastasectomy episodes. 5-year survival rates from 1st pulmonary metastasectomy were 34% (BS), 25%(STS) and 30% for mixed series. TCR 5 year survival rates from 1985-2004 are in the table for comparison. In published series 43% of patients had a 2nd metastasectomy, some having 10 or more surgical episodes. Better survival was reported in patients with fewer metastases, and a longer interval between first diagnosis and the appearance of metastases. No data concerning symptoms were found.

	Number of studies or Registry	*Number of patients*	*Era*	*Five year survival*
Bone sarcoma reports	4 case series	495	1980-2008	34% Metastasectomy
Thames cancer registry	Registry	762	1985-1994	20% TCR Stage 4
Thames cancer registry	Registry	709	1995-2004	25% TCR Stage 4
Soft tissue sarcoma reports	6 case series	355	1983-2007	25% Metastasectomy
Thames cancer registry	Registry	5615	1985-1994	13% TCR Stage 4
Thames cancer registry	Registry	6257	1995-2004	15% TCR Stage 4
Mixed series	4 case series	380	1977-2007	30% Metastasectomy

Conclusions: Pulmonary metastasectomy with curative intent is established treatment for selected patients with sarcoma. Better survival with fewer metastases and/or a longer interval may reflect better natural history rather than a differential effect of metastasectomy. Five year survival amongst patients having metastasectomy is higher than in TCR patients with metastases by an absolute difference of about 10% which is the most optimistic estimate of the survival benefit. How much of the 10% might be attributable to the surgery, rather than selection for surgery, cannot be determined. Given that there is certain harm associated with thoracotomy, often repeated, better evidence and a bigger effect, are needed to justify current referral practice.

007 Should we Operate on Patients with Colorectal Lung and Liver Metastases

Authors: U.B. Naidu; R.G. Evans; J. Nandi ; J. Kumara; P.B. Rajesh

Heart of England Hospital NHS Trust, United Kingdom

Objectives: Colorectal primaries metastasising to lung and liver may imply more widespread macroscopic disease with consequent poorer prognosis than those spreading to lung alone.

Methods: Colorectal pulmonary metastasectomies performed between 1995 and 2011 were retrospectively studied. Patients were divided into two groups: those who had pulmonary metastasis resected (group A, n= 80) and those having sequential hepatic and pulmonary metastasectomies (group B, n =45).

Results: The groups were matched for age (67 versus 61 years; p=0.32), sex (21% versus 29%;p=0.22), mean disease free interval (42 versus 35 months; p=0.38), adequate control of the primary (94 versus 91%;p=0.4). There was no significant differences in median survival between the two groups (1001 versus 1093 days; log rank test p=0.57).

Conclusions: Carefully selected patients undergoing sequential hepatic and pulmonary colorectal metastasectomies can achieve comparable survival outcomes to patients with pulmonary metastasis alone.

008 The Determinants of Survival in Patients Undergoing Pulmonary Metastastectomy for Metastatic Sarcoma

Authors: D. Eaton; K. Mujahid; M. Hawari; S. Vaiyapuri; L. Pabla; S. Trotter; M. Kalakat

Heartlands Hospital, United Kingdom

Objectives: To determine which features are associated with improved survival in patients undergoing pulmonary metastastectomy.

Methods: All patients who had undergone pulmonary resection for metastatic sarcoma from 2000 to present day were analysed.

Results: 74 patients underwent metastastectomy. A total of 125 metastastectomies were performed. 64 via thoracotomy and 49 using a thoracoscopic approach. 12 redo-procedures were performed. The median age was 55 (range 17 to 76 years). 29 females and 45 males. The median time interval between diagnosis of primary sarcoma and first pulmonary metastectomy was 26 months (range 2- 226 months). 17 soft tissue sarcomas, 14 were osteosarcomas, 6 leiomyosarcomas, 5 chondrosarcomas, 4 liposarcomas, 4 Ewing's sarcoma, 4 spindle cell tumours, 4 pleomorphic lipo/sarcomas, 2 each of MFH and MPNST and 1 each of adamantinoma, synovial, angio-, desmoplastic, epitheliod, myxoid chondrosarcoma, fibromyxoid, fibrosarcoma, mesenchymal and myofibroblastic sarcoma. Survival was analysed for different histological types and grade: soft tissue high grade, bone high grade, soft tissue low grade and bone low grade. There was no statistical difference between soft tissue and bone sacomas.

Conclusions: Pulmonary metastastectomy for pulmonary metastasis from sarcoma is carried out both for diagnosis and prognosis. Overall survival was 69.3% at 1 year, 34.7% at 2 years and 13.3% at 5 years.

009 The Impact of Modern Mediastinal Nodal Staging Modalities on the Frequency of Pathological N2 Disease in Patients Undergoing Surgery for Lung Cancer

Authors: Johan Van der Merwe; M. Dusmet; A. Nicholson; S. Jordan; G. Ladas; E. Lim

Royal Brompton and Harefield NHS Trust, United Kingdom

Objectives: Intra-operative mediastinal lymph node involvement (N2) in non-small cell lung cancer (NSCLC) was diagnosed in 24% of patients in 1994, which was before the progressive utilization of modern staging modalities (PET-CT and EBUS) in 1999. This study aimed to determine the incidence of pathologic N2 disease after 1999.

Methods: Our institutional thoracic surgery and pathology databases were scrutinised for the presence of N2 disease, and staging undertaken according to TNM 7. The percentage of positive N2 cases was expressed arbitrarily in 4 yearly time frames to assess any change in frequency.

Results: From 1999-2009, 933 patients underwent surgery for known or suspected lung cancer. The data from 728 patients with NSCLC who underwent pulmonary resection and systemic nodal dissection (SND) at our institution was analysed. 175 patients were operated during 1999-2003, 259 patients during 2003-2007 and 277 during 2007-2009. Between 1999-2003, 33 patients (18.9%), between 2003-2007, 30 patients (11.6%) and between 2007-2009, 25 patients (9.0%) had evidence of pathologic N2 disease (p-value = 0.007). 17 data reports were unavailable in our cohort.

Conclusions: Our results suggest the association between improved clinical mediastinal nodal staging modalities and decreasing frequency of pathologic N2 disease in patients who underwent surgery between 1999-2009.

010 VATS Lobectomy Facilitates Delivery of Adjuvant Chemotherapy Following NSCLC Resection

Authors: Udo Abah[1] D. Church[2] W. Saka[2] D. Talbot[2] H. Kattach[1] V. Mehta[1] R. Sayeed[1] E. Black[1]

1 Department of Cardiothoracic Surgery, Oxford University Hospitals NHS Trust, United Kingdom; 2 University of Oxford Oncology Department, United Kingdom

Objectives: VATS lobectomy for early stage NSCLC is a safe and effective alternative to open lobectomy. Adjuvant chemotherapy is recommended for patients with performance status (PS) 0-1 following resection of NSCLC of stages T1-3 N1-2 M0 and T2-3 N0 M0 (NICE Clinical Guideline 121, 2011). We compared the delivery and toxicity of chemotherapy in patients following open and VATS lobectomy.

Method: We performed a retrospective study of all patients who had resection of primary NSCLC in a single surgical centre between October 2008 and April 2011. Surgical and chemotherapy databases were reviewed to extract data on patient characteristics, operative details, pathological stage, chemotherapy delivery and toxicity. Statistical comparisons were made by standard parametric, non-parametric, and contingency tests, with $P<0.05$ indicating statistical significance.

Results: 125 NSCLC cases, 57 (45.6%) VATS and 68 (54.4%) thoracotomy; 14/57 (24.5%) and 16/68 (23.5%) received adjuvant chemotherapy respectively. Patient demographics and tumour stage were similar between groups; median age [range]: 67.8 [53-83] vs. 69.0 [50-76](P=0.50); male: 50% vs. 50% (P=1.0); stage I/II: 71.4% vs. 60% (P=0.70); stage III: 21.4% vs. 40% (P=0.43); pre-chemotherapy PS of 0: 50% vs. 68.8% (P=0.46). All patients received platinum/vinorelbine therapy. Chemotherapy was initiated significantly earlier in the VATS group (median 53 days [30-82] vs. 67 days [35-83], P=0.046). Although dose intensity was similar between VATS and thoracotomy groups (% planned platinum dose: 68.4% vs. 72.8%; % planned vinorelbine dose: 69.2% vs. 71.5%; P=0.66 and P=0.84 respectively) there was a non significant reduction in grade 3/4 haematological toxicity in the VATS treated group (30% vs. 60%, P=0.15).

Conclusions: This study shows that VATS lobectomy for NSCLC, compared with thoracotomy, facilitates earlier delivery of adjuvant chemotherapy. VATS lobectomy may be associated with reduced toxicity of subsequent chemotherapy.

011 Risk of Intrathoracic Recurrence of Thymoma Following Preoperative Diagnostic Biopsy: A Cohort Study

Authors: J.L. Atkins; A.G. Nicholson; A. Rice; H. Pattenden; M. Dusmet; S. Jordan; G. Ladas; V. Anikin; E. Beddows; E. Lim

Royal Brompton and Harefield NHS Trust, United Kingdom

Objective: The risk of intrathoracic seeding has led to recommendations of avoiding pre-operative diagnostic biopsy in patients with suspected thymoma. To quantify the risk, we reviewed our experience in patients with a diagnosis of thymoma who underwent preoperative biopsy versus those that went to directly to surgery.

Material and Methods: We reviewed our institutional experience over an 11 year period. Patients were identified from a pathology database and outcomes were obtained by case review. Frequencies were expressed as proportions and compared using Fisher's exact test.

Results: From 1990 to June 2011 a total of 111 patients underwent surgery for thymoma, of which 66 patients had a pre-operative biopsy and 45 did not. Seven patients were excluded as four patients had biopsy followed by debulking, two had biopsy only and one patient had a bone marrow biopsy, leaving 59 patients who had a pre-operative biopsy followed by surgery. In total 10 (5 intra thoracic and chest wall, 2 nodal, 1 bone, 1 lung and 1 bronchial) of the 59 patients and 4 (3 intrathoracic and one nodal) patients had evidence of recurrence in the preoperative and no preoperative biopsy groups respectively Comparing intrathoracic recurrences, there was no evidence of a difference between the two groups (8.4% versus 6.7%; P=0.583).

Conclusions: Our results suggest that a small proportion of patients develop intrathoracic recurrence after surgery for thymoma. Preoperative biopsy was not associated with a higher recurrence of intrathoracic metastases on follow up.

012 Analysis Of Potential Quality Outcome Measures for Lung Cancer Surgery Across A Cancer Network

Authors: Annabel Sharkey; S.S. Begum; D. Hopkinson; T. Locke; J. Rao; J. Edwards

Department of Cardiothoracic Surgery, Northern General Hospital, Sheffield Teaching Hospitals NHS, United Kingdom

Introduction: Measures of quality in thoracic surgical services are under scrutiny to aid service development and in revalidation of consultant surgeons. The aim of this study was to examine various potential markers of a quality service on the basis of the individual Lung Cancer MDT Methods Data from the returns to the UK Thoracic Surgery Database for patients first seen between 1/1/09 to 31/12/10 were analysed. Denominators were taken from the National Lung Cancer Audit returns. Number of procures done expressed as pneumonectomy /lobectomy/ lobectomy complex /segmentectomy/wedge resection.

		Unit A	*Unit B*	*Unit C*	*Unit D*	*Unit E*	*p*
Resection Rate	(% of histologically confirmed NSCLC)	18.7	19.8	21.0	22.8	16.5	0.84
FEV1 %	Median (range)	72 (52-103)	79 (27-131)	77 (44 - 151)	81 (34 -128)	76 (26 - 131)	.60
Thoracoscore	Median (range)	2.3 (0.5 -8.41)	1.97 (0.61 -5.8)	2.29 (0.5 - 9.55)	1.83 (0.76 - 9.55)	2.29 (0.38 - 12.57)	0.223
Procedures	pneumonectomy /lobectomy/ lobectomy complex /segmentectomy/ wedge resection	5/21/2 /1/2	11/70/ 5/1/5	6/22/ 0/1/6	0/28/ 1/0/5	16/77/ 4/9/12	0.19 /0.18/ 0.61/ 0.10/ 0.24
VATS	% resection by VATS	12.9	2.8	4.3	17.6	9.3	<0.01
Systematic Lymph Node Dissection	3 N2 Stations (%)	54.8	11.4	51.1	8.8	1.0	<0.01
Operative mortality	All resections (%)	0	0	5.4	2.9	3.5	0.49
Length of stay	Median (range)	8 (3-36)	8 (3-32)	9 (1-62)	(1-22)	8 (1-100)	0.47
1 year postop Survival rate	%	87.1	85.7	85.9	91.2	84.6	0.68

Conclusions: There are significant differences between MDTs in number of patients undergoing systematic lymph node dissection at resection, and the number of those undergoing video assisted thoracoscopic resection as opposed to resection via thoracotomy. There are no significant differences in procedure performed, pre-operative mortality risk, post-operative length of stay or mortality. Further study is required to determine the implications of these differences for service provision.

013 Surgical Therapy for Necrotizing Pneumonia and Lung Gangrene

Authors: M. Schweigert[1] R.J. Stadlhuber[1] C. Gunther[1] M. Beron[1] A. Dubecz[1] H.W. Waclawiczek[2] H.J. Stein[1]

1 Department of Thoracic Surgery, Klinikum Nuremberg Nord, Germany; 2 Department of Surgery, University Hospital PMU Salzburg, Austria

Objective: Necrotizing pneumonia, pulmonary abscess and lung gangrene are rare complications of severe pulmonary infection with devitalization and sloughing of lung tissue. Pulmonary necrosis is often associated with alcoholism and other chronic disorders with known immunodeficiency. Mortality is significant and both treatment strategies as well as the role of surgery are controversially debated.

Methods: In a retrospective review at a German tertiary referral hospital 20 patients with pulmonary resection for necrotizing lung disorders were identified since 2008. At hospital admission all patients suffered from pulmonary sepsis and despite adequate medical treatment progressing parenchymal destruction and devitalization took place. The majority of the patients sustained pleural empyema (13/20) and five a persisting air leak. On account of failing medical therapy eight patients (40%) developed severe sepsis with septic shock and four (20%) were already preoperatively ventilated. Chronic alcoholism was present in 10 patients (50%).

Results: Gangrene of a complete lung was seen in four cases. Lobar gangrene or necrotizing pneumonia complicated by fulminate abscess was seen in the right lower lobe (8/20), middle lobe (4/20), right upper lobe (2/20) and left lower lobe (2/20). Procedures included pneumectomy (4/20), lobectomy (13/20) and limited resection (3/20). The bronchial stump was reinforced with a pedicled muscle flap in 7 cases. There were three postoperative deaths due to septic shock with multi-organ-failure. The remaining 17 patients (85%) recovered well.

Conclusions: Necrotizing pulmonary infections are infrequent but life-threatening disease entities. Patients often present with severe comorbidity and chronic disorders causing immunodeficiency. If initial medical therapy fails surgery offers a reasonable therapeutic approach. Aim of surgical therapy is resection of all gangrenous lung parenchyma and effective drainage of pleural empyema.

014 Lower Lobe Lung Volume Reduction Surgery: Post Operative Impact on Pulmonary Function and Health Status

Authors: Paul Aifesehi; I. Oey; M. Morgan; S. Rathinam; T.J. Spyt; D.A. Waller

University Hospitals of Leicester, Glenfield Hospital, United Kingdom

Objectives: Following the NETT trial there has been an assumption that lung volume reduction surgery (LVRS) should not be offered for predominantly lower lobe disease. We have continued to operate in this group and have reviewed their long-term outcome.

Methods: From a prospective 15 year database of 235 LVRS cases we identified 28 patients, 18 male; median age 59.5 (41-72) years that underwent lower lobe surgery. 13 patients were α1-Anti Trypsin deficient. We analysed their longitudinal clinical outcome in pulmonary function and health status (SF36) up to 4 years.

Results: 28 patients underwent 30 operations (18 first stage unilateral, 10 one stage bilateral, 2 second stage unilateral), 20 were completed by video assisted thoracoscopic surgery (VATS), 2 were converted to thoracotomy and 8 had elective median sternotomy. Intensive care was required in 8 patients; 3 patients died in hospital. There were significant postoperative improvements in Forced expiratory volume in one second (FEV1), total lung capacity (TLC) and residual volume (RV)at 6 months ($P<.05$). The improvement in FEV1 was lost after 1 year and in RV and TLC after 2 years.FEV1 fell below preoperative levels after 4 years ($P<.05$). However, RV and TLC had not significantly increased above preoperative levels by 4years. The best improvements in health status were seen in the physical and social functioning, energy and vitality, and general health perception domains which were better than baseline for 2 years ($P<.05$).There were lesser improvements in the physical role limitation and mental health domains for up to 6 months ($P<.05$). There was no difference in the outcome of those who were or were not α1-AT deficient.

Conclusions: In our experience we have found that lower lobe LVRS confers lasting benefits in both physiological and functional parameters regardless of α1-AT status. We are encouraged to continue this practice and plan to assess comparative results with upper lobe LVRS.

015 Does a Staged Unilateral Approach to Lung Volume Reduction Surgery Run the Risk of Missing the Boat? What Happens to the Non-operated Lung?

Authors: P.A. Gupta; K.K.W. Lau; I. Aslam; I. Oey; S. Rathinam; M. Morgan; D. Waller

Glenfield Hospital, United Kingdom

Objectives: Lung volume reduction surgery (LVRS) is traditionally a bilateral operation but we have found benefit in a prolonged staged unilateral approach. There remains concern that the non-operated lung will deteriorate in the interval.

Methods: From a prospective database of 235 LVRS operations, we identified 43 consecutive patients (31M:12F, median age 58 years) who were all initially suitable for bilateral LVRS and who underwent reassessment. We analysed changes in repeat quantitative radionuclide scintigraphic perfusion scans performed as part of their assessment for 2nd stage LVRS. We also analysed changes in lung function and subsequent clinical outcome.

Results: Most of the first-stage operations were carried out on the right side (77%) and on the upper lobe (91%). Median time interval between the first and second perfusion scans was 4.0 years (range 0.5 to 9). At reassessment, there was no significant change in the relative total perfusion of the operated lung (p=0.24). Nor was there a significant change in the relative perfusion (Q-score) of the operated target zone (p=0.17). In the non-operated lung, the contralateral target zone showed a significant reduction in Q-score representing an increase in heterogeneity (median -3.7 (IQR -7.4 to 2.7), p=0.003). Of the 43 patients: 26 patients went onto have 2nd stage LVRS whilst 17 patients were deemed unsuitable. The reasons included: death whilst waiting, deterioration in gas transfer and development of pulmonary hypertension. However, all but one retained heterogeneity.

Conclusions: This study provides rare information about the natural history of emphysema and demonstrates dissociation between changes in lung function and anatomy. The concerns that the unoperated lung will deteriorate and lose target areas for surgery are unfounded. The results support our policy of staged unilateral LVRS with a prolonged interval determined by patient choice.

016 Non-Surgical Approach for Lung Volume Reduction: A Single Centre Experience with Endobronchial Valves

Authors: R.S. George[1] R. Govindraj[1] W. MacDonald[2] R. Milton[1] K. Papagiannopoulos[1] N. Chaudhuri[1]

1 St James's University Hospital, United Kingdom; 2 Leeds General Infirmary, United Kingdom

Background: Emphysema kills two people every hour in the United Kingdom. LVRS and Transplant can improve quality of life and survival in selected patients but are associated with significant morbidity and mortality. Bronchoscopic approach using a one-way valve (endobronchial valves, EBV) is an alternative less invasive novel therapy. We report the largest single thoracic centre experience in the UK, surgical pathway and challenges involved with the introduction of this technique.

Methods: Since 1st December 2010, 22 patients with emphysema were assessed for EBV or LVRS. Under a GA they underwent assessment for the presence of collateral ventilation using a Chartis catheter. In the absence of collateral ventilation, EBVs were inserted in target bronchii. Immediate and short-term complications were recorded prospectively.

Results: Out of 22, 17 patients (13 males) received EBV. Average age was 58.6±10.9 years. Pre-valve insertion mean predicted FEV1, FVC, and TLCO were 40.4±19.5%, 79.2±13.6%, and 35.5±12.8%, respectively. In total 66 EBVs were inserted in the following lobes (27 RUL, 6 RML, 4RLL, 24 LUL, 5 LLL). Three patients (17.6%) had considerable improvement and had further treatment to other segments. Four had their valves removed due to: excessive endobronchial secretion (1 patient), displacement (2), and no benefit (1); one had his EBV replaced due to mechanical dysfunction; and two developed post-insertion pneumothorax. One patient developed a pneumothorax two weeks post EBV from a ruptured bulla in a non-treated lobe. Average post-insertion length of stay was 2.5±3.5 days (median 1 day, min-max: 0-12 days). There were no deaths. An average of 3.8 valves per patient meant £6,516 direct costs per patient for the valves themselves.

Conclusions: EBVs provide a less invasive intervention for emphysema. Thoracic surgeons are uniquely placed for assessing the potential benefits and cost-effectiveness of this novel therapy in comparison to LVRS or Lung Transplantation.

017 The Use of Endobronchial Valves for Lung Volume Reduction: An Early Experience

Authors: O. Nawaytou; G. Elshafie; R. Sabit; M. Kornaszewska

University Hospital of Wales, United Kingdom

Objectives: Lung volume reduction surgery has been used successfully for the management of patients with severe chronic obstructive pulmonary disease (COPD) with improvements in quality of life and pulmonary function. This, however, comes at a cost of high morbidity and mortality. Recently, several endoscopic procedures have been developed for the same aim with early promising results. We present our early experience with the use of unidirectional endobronchial valves (EBV) in an aim to assess their safety and efficacy in patients with severe COPD.

Methods: Between February 2010 and October 2011, 9 patients with terminal COPD were considered for EBV therapy. The mean FEV1 was 31.3±18.7% and the mean RV was 166±123.8% predicted. Patients were assessed to a strict protocol including full pulmonary function testing (PFT), high resolution CT, ventilation/perfusion scan, echocardiogram and functional assessment. The last 5 patients also had cardiopulmonary excercise testing (CPET). All the procedures were performed under awake sedation using flexible bronchoscopy and endobronchial collateral ventilation assessment was employed in 7 patients. Patients will be followed up with PFT and CPET at 6 months post discharge.

Results: 8 patients had an average of 2 Zephyr EBV (Pulmonx Corporation, CA) successfully deployed. One patient was deemed unsuitable due to evidence of cross ventilation. There was no in-hospital morbidity or mortality and mean hospital stay was 1.5±1.2 days. At follow up, 3 patients developed conservatively treated pneumonia and 2 required bronchoscopy. One patient developed worsenintg of COPD and had the valves extracted. There were no episodes of migration or haemoptysis. There was a postprocedural improvement in ECOG performance status from 2.8±0.4 to 1.8±1.1 (p=0.04). CPET results are pending.

Conclusions: EBV insertion is a safe and feasible modality for the management of severe COPD. Early results show a good subjective outcome which needs objective validation.

018 Lung Volume Reduction (Surgery): Time to Reduce Collateral Damage?

Authors: Paul Vaughan[1] M. Kornaszewska[2] U.B.V. Naidu[1]

1 Birmingham Heartlands Hospital, United Kingdom; 2 University Hospital Wales, United Kingdom

Lung Volume Reduction Surgery (LVRS) effectively palliates the symptoms of end-stage emphysema, especially with improved patient selection following the NETT trial. Heterogeneity is the single most important factor when selecting patients for surgery. Unfortunately LVRS is not applicable to the vast majority of emphysema sufferers, and significant post operative morbidity remains commonplace. Unidirectional endobronchial valves (EBV's) placed within lobar bronchi resulting in distal atelectasis, theoretically provide a volume reduction effect with a much reduced risk profile. When implanted into patients who would otherwise undergo LVRS, improvements in lung function, symptoms and exercise capacity were only modest compared to best medical practice (eg.VENT trial). A subgroup analysis of the data showed those with complete fissures and heterogenous disease had an excellent response. This implies that interlobar (collateral) ventilation (CV) is also an important predictor of outcome. Where heterogeneity is predictive of outcome following LVRS, we propose that absence of CV is THE key determinant for volume reduction using EBV's. We illustrate this concept with case studies demonstrating the interaction between volume reduction and collateral ventilation. Assessment of CV is possible using an endobronchial occlusive balloon catheter with measurement of distal tidal airflow (Chartis). A pilot study where Chartis was used in conjunction with EBV implantation demonstrated excellent results in CV negative patients. More data is needed to further assess the impact of CV measurement in clinical practice. We propose a multicentre RCT comparing EBV implantation in CV negative patients to best medical therapy with the primary outcome measure being improvement in lung function. Secondary outcomes include a full economic analysis and improvements in symptoms, quality of life and exercise capacity. Approval and funding are pending.

019 Mitochondrial Remodelling in a Mouse Model of Coronary Heart Disease

Authors: Simon Duggan; A.P. Halestrap; G.D. Angelini; M.S. Suleiman

Bristol Heart Institute, United Kingdom

Background: Mitochondria are dynamic organelles whose function is regulated by changes in their shape through the processes of fusion and fission. Dysfunction of these processes has been implicated in cardiac pathologies. However, it is unclear whether changes in mitochondrial morphology contribute to the mitochondrial dysfunction observed in ischaemic heart disease.

Aim: To investigate the expression of fusion and fission proteins and mitochondrial morphology in a model of chronic coronary heart disease (CHD).

Methods: Male apolipoprotein E knockout mice (ApoE-/-) were fed either a western-type high-fat diet or chow diet (control) for 24 weeks from weaning (n=5/group). Only ApoE-/- mice fed high-fat diet develop significant coronary atherosclerosis (CHD). Expression of two fusion-related proteins mitofusin (Mfn) 1, Mfn2, and one fission-related protein, phosphorylated dynamin-related protein 1 (pDrp1) were determined by western blotting of left ventricular tissue. Quantification of mitochondrial morphology by electron microscopy was assessed by number of mitochondria per area, individual cross-sectional area and mitochondrial length.

Results: Mfn1 protein level was significantly decreased in coronary heart diseased tissue compared with non-diseased control mice (control, 0.59 ± 0.0^{5} CHD, 0.47 ± 0.0^{2} $p<0.05$, n=5). There was no difference in protein levels of Mfn2 or pDrp1, between control and diseased mice. Furthermore, mitochondria from diseased mice are significantly smaller in area (control, 1.12 ± 0.3^{6} CHD, 0.45 ± 0.0^{2} $p<0.05$, n=3), appearing more fragmented and shorter ($p<0.05$, n=3).

Conclusions: These data provide evidence of cardiac mitochondrial remodelling during coronary heart disease and suggest the fusion-related protein Mfn1 might be responsible. Targeting mitochondrial dynamics is a potential cardioprotective strategy during open heart surgery.

020 The Right Ventricle Performs as Well as the Left Ventricle in the DCD Donor Heart

Authors: Fouad Taghavi[1] C.E. Woods[1] S.R. Large[2] E. Ashley[1] A. Ali[2]

1 Stanford University, USA; 2 Papworth Hospital NHS Foundation Trust, United Kingdom

Objectives: Heart transplantation from DCD donors is not undertaken due to concerns over ischemic injury. We have demonstrated in animal models that the DCD heart can be resuscitated and transplanted, however initial right ventricular (RV) pressure-volume (PV) loops were morphologically abnormal. Myocardial failure is an important problem after heart transplantation, RV failure is most common, although its mechanisms remain poorly understood. RV and left ventricle (LV) have different embryonic origins. To investigate further we compared function of both RV&LV in control and DCD hearts. To study organ function we used pressure-volume (PV) loops. To study function at a molecular level we analyzed intracellular calcium handling and contraction.

Methods: Male Sprague-Dawley rats were subjected to DCD heart resuscitation using ECMO 15 minutes after circulatory arrest. RV&LV PV loop measurements were made. Myocytes were isolated separately and loaded with calcium indicator Fluo-5f. Sarcomere length (SL) was measured during contraction to assess contractility. Intracellular calcium (deltaF/F) was measured epifluorescently. Sham operated animals were used as control.

Results: RV function decline mirrored LV function decline from control to DCD with no statistical differences seen between RV&LV when looking at: end systolic pressure volume relationship, preload recruitable stroke work and contractility index (n>7 animals in each group). At a molecular level RV function mirrored LV function in control and DCD when looking at: myocyte %SL change, speed of contraction and deltaF/F (n>60 in each group).

Conclusions: Our initial concerns over abnormal RV PV loop morphology in DCD hearts have been put to rest. The RV does not perform worse than the LV after DCD heart resuscitation. Even though the RV & LV have different embryonic origins, measuring LV alone in this model is sufficient in accessing the DCD heart. Our efforts must now focus on optimising the DCD heart for potential transplantation.

021 Activation of Leukocytes During Surgery with Cardiopulmonary Bypass is Attenuated by Sulforaphane in a Porcine Model: A Novel Therapeutic Strategy

Authors: Bao Nguyen[1] G. Jakaj[2] H.M.L. Naase[1] L.A. Luong[3] J.R. Finch[2] J. Mulholland[2] J.R. Anderson[2] D.O. Haskard[1] G.D. Angelini[2] P.C. Evans[3]

1 BHF Cardiovascular Sciences Unit, National Heart and Lung Institute, United Kingdom; 2 Department of Cardiothoracic Surgery, Imperial College London, United Kingdom; 3 Department of Cardiovascular Science, University of Sheffield, United Kingdom

Objectives: Cardiopulmonary bypass (CPB) activates leukocytes leading to a systemic inflammatory response via induction of pro-inflammatory reactive oxygen species (ROS), activation of p38 MAP kinase and NF-kappaB. The aim of this study was to determine whether administration of sulforaphane, a broccoli derivative extract, could provide vascular protection against pro-inflammatory activation during CPB in a large mammalian model.

Methods: Adult Landrace pigs (n=8) were allocated to undergo surgery with or without sulforaphane pre-treatment before being subject to CPB for 2 hours using a conventional circuit instituted via median sternotomy. Blood was sampled at varying timepoints relative to CPB and leukocytes were loaded with a ROS-sensitive probe or alternatively fixed and permeabilized prior to intracellular staining using antibodies that recognise active, T180/Y182 phosphorylated p38 MAP kinase or S529 phosphorylated RelA NF-kappaB sub-units. Cellular activation was quantified by flow cytometry.

Results: Surgery led to activation of ROS, p38 and NF-kappaB in leukocytes in control animals. Levels of p38 activation were reduced by 36% after 2h ($p<0.05$) and NF-kappaB phosphorylation was reduced by 50% at 2h after the commencement of CPB ($p<0.01$) in sulforaphane pre-treatment subjects compared to baseline. This correlated with a reduction in serum lactate levels at all time points, with the greatest difference observed at 1hour of CPB (control mean 7.5mmol/l vs. sulforaphane pre-treated mean 2.7mmol/l).

Conclusions: In this animal model of CPB, sulforaphane pre-treatment prevented pro-inflammatory activation of leukocytes corresponding with reduced metabolic stress. This warrants further detailed investigation as an inflammatory-protective agent in clinical studies.

022 Allogeneic Red Cell Transfusion Causes Acute Lung Injury in the Absence and Presence of Cardiopulmonary Bypass in a Novel In-Vivo Porcine Model

Authors: Nishith Patel[1] H. Lin[1] C. Jones[1] G. Walkden[1] P. Ray[2] P.A. Sleeman[1] G.D. Angelini[1] G.J. Murphy[1]

1 Bristol Heart Institute, United Kingdom; 2 Weston General Hospital, United Kingdom

Objective: Allogeneic red blood cell (RBC) transfusion in cardiac surgical patients is associated with a four-fold increase in pulmonary complications. The mechanism of injury is unclear and there is a lack of experimental models that have homology to cardiac surgical patients. Our objectives were to determine whether transfusion of allogeneic RBC causes acute lung injury (ALI) in swine, to assess whether RBC storage duration affects ALI, and to evaluate the interaction of RBC transfusion with cardiopulmonary bypass (CPB) in the genesis of Transfusion Related Acute Lung Injury (TRALI).

Methods: Adult White-Landrance pigs (50-70kg, n=35) were infused with 500mls of allogeneic 14-day or 42-day old RBC units in the presence or absence of CPB. Controls received saline. Perfusion pressure and hydration were standardised. All pigs were recovered and assessed for ALI, inflammation and endothelial activation at 24hrs. Data were analysed using ANOVA with post-hoc bonferroni tests.

Results: RBC transfusion in sham pigs caused ALI characterised by reduced lung compliance, an increase in protein levels in bronchoalveolar lavage fluid, histological lung injury, neutrophil infiltration and endothelial activation that was unrelated to RBC storage duration. Transfusion of blood stored for up to 42 days resulted in greater macrophage infiltration, platelet activation and depletion of T-lymphocytes in recipient lungs versus 14-day-old blood. Transfusion interacted with CPB to increase lung injury in the absence of platelet activation.

Conclusions: In this novel large animal model of allogeneic RBC transfusion, TRALI occurs in the absence of any clear priming event and is mediated by monocyte activation and T lymphocyte depletion. Modification of stored RBC units prior to transfusion may reduce the incidence of pulmonary dysfunction post cardiac surgery.

Mean (±SEM)	*Experiment 1*				*Experiment 2*		
	Sham (n=7)	Day 14 RBC Tx + Sham (n=7)	Day 42 RBC Tx + Sham (n=7)	ANOVA (P value)	CPB (n=7)	Day 42 RBC Tx + CPB (n=7)	ANOVA (P value)
Lung Compliance (ml/cmH2O)	+1.57 (0.72)	-2.50 (0.87)*	-2.57 (1.19)*	0.012	-2.71 (0.68)*	-5.86 (1.10)§	<0.001
BAL Total Protein (mg/ml)	0.01 (0.01)	144.28 (0.03)*	644.76 (0.12)**	<0.001	1659.59 (0.04)*	2277.72 (0.03)§	<0.001
Lung Injury Score	0.08 (0.02)	0.39 (0.03)*	0.37 (0.05)*	<0.001	0.17 (0.01)	0.56 (0.04)§	<0.001
Mean number of neutrophils per mm^2	0.80 (0.13)	6.20 (0.29)*	6.67 (0.49)*	<0.001	2.75 (0.45)*	8.00 (0.26)§	<0.001
Mean number of MAC-387 (macrophages) positive cells per mm^2	0.37 (0.06)	8.19 (0.29)*	18.53 (0.17)**	<0.001	7.95 (0.55)*	22.37 (0.26)§	<0.001
Mean number of CD3+ T-lymphocytes per mm^2	18.16 (2.44)	13.08 (1.32)*	4.95 (0.65)**	0.001	32.77 (1.53)*	25.65 (1.30)	0.001
Mean number of PAC (activated platelets) positive cells per mm^2	0.42 (0.04)	11.29 (0.37)*	20.13 (0.16)**	<0.001	2.10 (0.10)*	2.22 (0.07)*	<0.001

*p<0.05 vs sham

**p<0.05 vs Day 14 RBC Tx + Sham

*p<0.05 vs sham

§p<0.05 vs CPB

023 Investigating Novel Regulators and Inhibitors of Aortic Valve Calcification

Authors: D.A. Lerman[1] N.C.W. Mackenzie[1] D. Zhu[1] S. Prasad[2] W. Walker[2] M. Dweck[3] D. Newby[3] V.E. Mac Rae[1]

1 The Roslin Institute and Royal (Dick) School of Veterinary Studies, The University of Edinburgh, United Kingdom; 2 Royal Infirmary Hospital of Edinburgh (NHS Lothian)/University of Edinburgh, United Kingdom; 3 Centre for Cardiovascular Science, University of Edinburgh, United Kingdom

Objective: Activation and transformation of aortic valvular interstitial cells (VICs) are implicated in the pathogenesis of severe calcific aortic stenosis (CAS). We aimed to characterise gene expression pathways of CAS in porcine VICs and to determine the in vitro effects of a novel inhibitor of calcification.

Methodology: In vitro calcification studies were undertaken using porcine aortic VICs. Calcification was induced by 3 mM sodium phosphate (Na_3PO_4), pH 7.4, and the effect of denosumab (an inhibitor of Receptor Activator of Nuclear factor K-B Ligand, RANKL; 50µg/mL) was analysed. mRNA expression of osteoblast and myofibroblast markers were measured by quantitative polymerase chain reaction (qPCR). Calcification was determined by alizarin red staining and alkaline phosphatase (ALP) activity.

Results: Initial studies demonstrated that porcine VICs calcify spontaneously with demonstrable calcium deposition by day 14 (376.7% increase; $p<0.001$) associated with a progressively 3-fold increase in ALP activity ($p<0.05$). Expression of the osteoblast markers Runx2 (1.3 fold; $P<0.05$) and TGFβ (3.2 fold; $P<0.001$) were also increased at day 14 with similar increases seen in a number of myofibroblast markers including αactin (1.7 fold; $P<0.05$), RhoA (4.6 fold; $P<0.001$) and TGFβ. RANKL mRNA expression remained unchanged. Treatment of porcine VICs with Na_3PO_4 led to a marked increase in calcium deposition (535%; $P<0.05$). Denosumab dramatically inhibited this Na_3PO_4-induced calcification to baseline levels ($P<0.05$).

Conclusions: This study has demonstrated the up-regulation of key molecules during the calcification of VICs and has identified a potential inhibitor of this pathological process. A fuller understanding of the actions of denosumab may identify a novel therapeutic strategy for clinical intervention against aortic valve calcification and aortic stenosis.

024 Histological Appearances and Tensile Strength of Mesh Supported Carotid Arteries Four Months After Implantation: A Controlled Comparison in Sheep

Authors: P. Verbrugghe[1] F. Rega[1] E. Verbeken[1] M. Gelliwig[1] B. Meyns[1] T. Golesworthy[2] T. Treasure[3] J. Pepper[4]

1 University Hospitals Leuven, Belgium; 2 Exstent Ltd, United Kingdom; 3 Clinical Operational Research Unit UCL, United Kingdom; 4 Royal Brompton Hospital and Imperial College London, United Kingdom

Objectives: External aortic root support (EARS) as an alternative to aortic root replacement for Marfan syndrome, has undergone NICE Technology Appraisal. The implant is pliant, porous, and computer designed to exactly fit the patient's aortic root. All 30 patients are alive and well so there has been no opportunity to study the strength of a mesh/vessel composite, its histological appearance, or incorporation of the mesh. An expressed concern is that ensleeved arteries might lose wall thickness. We performed a comparative study in lambs to explore this hypothesis.

Methods: In six lambs EARS mesh was placed around a carotid artery. The artery was excised after 4-6 months and normal and ensleeved segments were examined microscopically and stress tested.

Results: We report on five lambs that grew from an average 16Kg to 27Kg (one died after surgery) with directly comparable data in four (Table). Microscopy confirmed integrity of the vessel architecture within the sleeve. In one specimen there was mild oedema in the outer part of the media for less then 25% of the circumference. Other findings were consistent in all animals. Fibrosis was found for at least 50% of the adventia. The lumen was normal but the vessel wall was significantly thickened. There was no significant difference in the elastic modulus in the "comfort zone" (EmodCZ) but there was a significant increase in the maximum tensile strength (Cauchy stress) of the supported segments compared to normal arterial tissue.

Sheep	*Normal carotid wall*	*Supported carotid wall*	*EmodCZ normal*	*EmodCZ supported*	*Cauchy stress N/cm² normal*	*Cauchy stress N/cm² supported*
1	0.7 mm	1.7 mm	1.11	2.83	206	1360
2	0.7 mm	1.9 mm	1.61	2.58	211	1057
3		2.0 mm		3.27		1129
4	0.6 mm	1.8 mm	1.33	1.38	170	370
5	0.7 mm	2.3 mm	1.20	4.53	167	863
Mean	0.7 mm	1.9 mm	1.31	2.92	189	956
T-Test		P=0.001		P=0.12		P=0.04

Conclusions: Experimental limitations include the small numbers, necessary in a large animal experiment, but the findings were consistent and, we believe, representative of the biological response to external support. The EARS mesh was well incorporated, the vessel wall was healthy, and its integrity preserved. Fibrosis of the tissue surrounding the adventia and tensile force testing confirmed (in sheep) strengthening of the artery. There was no evidence of vessel wall thinning within the sleeve.

025 Perhexiline Modulates Myocardial Energetics and Ameliorates Redox Stress

Authors: Nigel Drury[1] D.T. Ngo[2] M.P. Frenneaux[3] D. Pagano[1] J.D. Horowitz[2]

1 Queen Elizabeth Hospital Birmingham, United Kingdom; 2 University of Adelaide, Australia; 3 University of Aberdeen, United Kingdom

Introduction: Perhexiline exerts anti-ischemic effects via mechanisms that may include inhibition of myocardial carnitine palmitoyltransferases and potentiation of nitric oxide responsiveness. We evaluated the effects of perhexiline on the anti-oxidant thioredoxin (TRX) system, including its endogenous inhibitor thioredoxin-interacting protein (TXNIP), endothelial nitric oxide synthase (eNOS), the energetic sensor AMP-kinase (AMPK) and its downstream effector PGC-1α.

Methods: Left ventricular biopsies were obtained from patients undergoing CABG in a randomised, double-blind, placebo-controlled trial of preoperative perhexiline, at three stages: before aortic cross-clamping (pre-ischemia), immediately prior to cross-clamp release (end-ischemia), and 10 minutes after release (reperfusion). Biopsies were mechanically lysed in liquid nitrogen and dissolved in lysis buffer. Protein expressions were analysed using Western blot analysis: TRX-1, TXNIP, TRX-reductase, eNOS, peNOS (Ser 1177), AMPK, pAMPKα (Thr172), and PGC-1α. Two-way ANOVA was used to compare differential protein expressions between perhexiline versus placebo during ischaemia-reperfusion.

Results: Biopsies were obtained from 24 patients, 12 in each group. None of the parameters changed significantly during ischaemia-reperfusion. There was a significant decrease in TXNIP expression ($p<0.001$) with perhexiline; the fall in TRX-reductase ($p=0.07$) was not significant and TRX-1 expressions did not differ between groups. There was no difference in eNOS and peNOS (Ser1177) expression. There was a significant increase in AMPK ($p=0.03$) and PGC-1α ($p=0.03$) expression with perhexiline but pAMPKα (Thr172) was no different.

Conclusions: In addition to its previously described effects, perhexiline suppresses TXNIP expression and increases AMPK and PGC-1α expression. These actions may contribute to the beneficial effects of perhexiline on redox stress and energetic impairment in the myocardium.

026 Diabetic Cardiomyopathy - Proof of an Elevated Myocardial Oxidative Stress in CABG Patients?

Authors: Katja Denk[1] Y. Gramlich[2] U. Hink[2] T. Muenzel[2] A. Daiber[2] C.F. Vahl[3]

1 Dep. of Cardithoracic- and Vascular Surgery, Johannes-Gutenberg University of Mainz, Germany; 2 Cardiology, University of Mainz, Germany; 3 Cardiothoracic and Vascular Surgery, University of Mainz, Germany

Objectives: Hyperglycemia is suspected to induce oxidative stress which may induce morphopyhsilogical alterations of the myocardial texture in these patients (e.g. fibrosis, endothelial dysfunction). Concerning oxidative stress animal studies point towards relevant compensatory mechanisms due to altered expression of antioxidative enzymes. This study was performed as an attempt to verify parameters of oxidative stress in diabetic CABG patients.

Methods: Right atrial myocardium was obtained from 59 consecutive patients undergoing. Patients were assigned to either the Control (n=41, no diabetes) or the Diabetic (n=18, IDDM/NIDDM) group. In myocardial tissue altered protein expression of antioxidative enzymes was analyzed by Western or Dot blotting. Mean values derived from Control group were defined as 100% expression. Superoxide concentrations and functional enzymes as mitochondrial aldehyde-dehydroxygenase (ALDH2), endothelial NO-synthase (eNOS), the tetrahydrobiopterin (BH4)-synthesizing enzyme dihydrofolate reductase (DHFR) and heme oxygenase-1 (HO-1) were measured. For statistical analysis the Mann-Whitney-U-test was used.

Results: In diabetic myocardium superoxide levels were increased to 136±15% (vs. 100% Control group). Resulting in functional enzymatic changes: the DHFR stated fewer expression (86±20%), currently there was no group difference in expression of the ALDH2. There was a significantly attenuated activated eNOS in diabetic myocardium (p=0.025). The HO-1 was significantly elevated in diabetic patients (p=0.019).

Conclusions: Myocardium from diabetic patients undergoing CABG displays modulated expression of oxidative stress sensitive enzymes. Elevated superoxide levels and attenuated expression of activated eNOS and DHFR as well as elevated HO-1 are suggestive for an increased myocardial oxidative stress. These data are important to understand to the pathomechanism of diabetic cardiomyopathy.

027 TAVI vs SAVR in Patients with Severe Aortic Stenosis: Results from an Intermediate Risk Propensity-matched Population of the Italian OBSERVANT Study

Authors: Francesco Onorati[1] F. Santini[1] M. Ranucci[2] R.D. Covello[3] M. Barbanti[4] C. Tamburino[4] P. D'Errigo[5] S. Rosato[5] G. Santoro[6] F. Seccareccia[5]

1 Division of Cardiac Surgery University of Verona Medical School, Italy; 2 Department of Cardiothoracic and Vascular Anesthesia and ICU - IRCCS Policlinico San Donato, Milan, Italy; 3 Department of Anesthesia and Intensive Care, S. Raffaele University, Milan, Italy; 4 Division of Cardiology, Ferrarotto Hospital, University of Catania, Italy; 5 National Centre for Epidemiology, Surveillance and Health Promotion - Istituto Superiore di Sanità,, Italy; 6 Division of Cardiology, Careggi Hospital, Florence, Italy

Objective: This analysis describes procedural and post-procedural outcomes in a transcatheter aortic valve implantation (TAVI) and surgical aortic valve replacement (SAVR) subpopulation, potentially eligible to both treatments.

Methods: OBSERVANT is an observational prospective multicenter cohort study, enrolling patients with severe aortic stenosis undergoing SAVR or TAVI and collecting data on demographic characteristics, health status and type of intervention. Propensity score method was applied to analyze procedural and post-procedural outcomes. Pairs of patients with the same probability score were matched.

Results: The enrolled population (N=2108) comprises 1383 SAVR and 725 TAVI patients. Those in the TAVI groups were older and sicker than patients undergoing SAVR. Matched population comprised 266 patients (133 patients for each group). A relatively low risk population was selected (mean logistic EuroSCORE 9.4±10.4% vs 8.9±9.5%, SAVR vs TAVI; p=0.650). Thirty-day mortality was 3.8% for both SAVR and TAVI (p=1.000). The incidence of stroke was 1.5% SAVR vs 0.0% TAVI (p=0.156); that of myocardial infarction was 0.8% SAVR vs 0.8% TAVI (p=1.000); requirement for blood transfusion was 49.6% TAVI vs 36.1% SAVR (p=0.026). Major vascular damage was reported in the TAVI group only (5.3% vs. 0.0%; p=0.007). The RR for residual aortic regurgitation (grade 2 or more) was significantly higher in the TAVI group (5.2, 95% CI 2.7-9.9). Patients in the TAVI group had a significant higher rate of permanent A-V block (12% vs. 0.8%; p=0.008).

Conclusions: In the relatively low-risk propensity-matched population analyzed, despite similar procedural and 30-day mortality, SAVR was associated with a higher risk for blood transfusion, whereas TAVI showed a significantly increased rate of vascular damage, permanent AV block and residual aortic valve regurgitation.

028 Expanded Experience Using the Transaortic Approach for Transcatheter Valve Implantation using the Edward Sapien Valve

Authors: Rizwan Attia; M. Thomas; S. Redwood; J. Hancock; K. Macgillivary; K. Wilson; C.P. Young; V. Bapat

Guy's and St Thomas' Hospital, United Kingdom

Objectives: We report our up-to-date series for an alternative approach through the ascending aorta to implant Edwards SAPIEN THV valve in aortic position. We discuss in detail the technical aspects, the surgical advantages and future application of this novel approach. That might revolutionise surgical perspective on TAVI.

Methods: All patients were accepted through the multidisciplinary team. Conventional approach, Transfemoral (TF) or Transapical (TA) was either not possible or desirable and ascending aorta was deemed suitable for cannulation. We will describe the procedure in detail.

Results: 40/237 (17%) patients underwent the procedure. Median age was 86 (67-94years) with mean Logistic EuroSCORE of 27.2%. All patients had critical stenosis with mean AVA 0.67cm2, PG 72.5mmHg and LVEF 49%. Successful device implantation was achieved in all cases without any postoperative complications directly related to the approach. The incidence of chest sepsis, renal failure and stroke was 6.06%, 12.1% and no strokes compared to 12.2%, 12.8% and 4.85% compared to the TA and TF groups. This is despite higher incidence of co-morbidities (COPD), 17/40 (42.5%) vs. 23/204 (11.2%) p0.0[1] severe extra-cardiac arteriopathy, 10/40 (25%) vs. 25/204 (12.2%) p0.02 and >50% internal carotid artery occlusion 12/33 (34.3%) vs. 37/204 (18.1%) p0.001 in this cohort compared to the TA and TF routes. There were no procedure deaths. Kaplan-Meier analysis showed survival at 81.8%, 70%, 60% and 55% at 1month, 6months, 1year and 2 years which followed the survival curve for TF patients with slightly higher overall survival in the TA group.

Conclusions: The advantages of partial sternotomy are avoidance of post thoracotomy pain and preservation of respiratory dynamics (the pleura remain intact). LV function is preserved by avoidance of ventricular purse-stings. Future modification of delivery devices might make this a default approach after the TF route.

029 Conventional Aortic Valve Replacement Surgery in Patients not Suitable for TTranscatheter Aortic Valve - Outcome Assessment

Authors: R. Beattie; K. Booth; M. Jones; M. Spence

Royal Victoria Hospital, United Kingdom Transcatheter

Objectives: Patients who are high risk for conventional surgical aortic valve replacement (AVR) have been offered Transcatheter aortic valve replacement (TAVI) at our institution since 2008. These patients are discussed at a multi-disciplinary meeting and those who are refused on technical or clinical grounds for TAVI are offered surgical AVR. We aimed to assess the outcomes in this patient group.

Methods: Data prospectively collected between February 2008 and November 2011 for patients (n = 27) undergoing high-risk AVR were analysed (19 male).

Results: Sixteen16 patients (59%) had concomitant coronary artery bypass grafts, 2 (7%) had both mitral and aortic valve replacements, with the remainder solely AVR (9, 33%). Median ejection fraction was 50% (range 15-70) with mean logistic EuroSCORE of 21.57%. 2 patients (7%) had undergone previous cardiac surgery, one for coronary artery bypass grafting and the other for mitral valve repair. The mean logistic EuroSCORE was 21.57%. Median cross-clamp time was 103 (range 65-165 mins) and median bypass time was 137 (range 86-289 mins). There were no No in hospital deathsmortality was seen and the median length of hospital stay was 14 days (range 6-51). Major complications seen in the post-operative period included re-sternotomy for bleeding (2 patients), renal failure (1 patient) and sternal osteomyelitis (1 patient). One patient (3.7%) needed a permanent pacemaker and one (3.7%) required redo for paravalvular leak.

Conclusions: Conventional Open Surgery remains a valid option for high risk patients in need of aortic valve replacement.

030 Clinical Outcomes of Trans-Catheter Aortic Valve Implantation via the Subclavian Artery: A UK TAVI Registry Study

Authors: Moninder Bhabra[1] U. Trivedi[2] M. Jahangiri[3] D. Blackman[4] S. Khogali[1] D. Hildick-Smith[2] D. Cunningham[5] P. Ludman[6] N. Moat[7]

1 : Royal Wolverhampton Hospitals NHS Trust, United Kingdom; 2 Royal Sussex County Hospital, United Kingdom; 3 St Georges Healthcare NHS Trust, United Kingdom; 4 Leeds Teaching Hospitals NHS Trust, United Kingdom; 5 Central Cardiac Audit Database, United Kingdom; 6 University Hospital Birmingham NHS Trust, United Kingdom; 7Royal Brompton and Harefield NHS Trust, United Kingdom

Objectives: Transcatheter aortic valve implantation (TAVI) has been shown to significantly improve symptoms and prognosis in patients with severe aortic stenosis (AS) who are inoperable or at very high risk for conventional surgery. Whilst the majority of implantations are done via the femoral artery, this route is not suitable in the presence of significant aortic or ilio-femoral disease or tortuosity. An alternative access route for retrograde TAVI with the Corevalve device (Medtronic) is the subclavian artery. The aim of this report is to describe clinical outcomes with this technique in the UK.

Methods: Data for all patients undergoing TAVI in the UK have been submitted prospectively to the Central Cardiac Audit Database. Follow-up mortality data was obtained from the Office of National Statistics as of September 2010

Results: From the first implant in 2007 to the end of 2010, there were 1620 TAVI procedures done in the UK, of which 706 were with the Corevalve prosthesis. Ninety one of these were delivered by the subclavian route. The patient characteristics in this group were: mean age 82 years; median logistic EuroSCORE 22 previous cardiac surgery in 30.8%; peripheral vascular disease in 56.5%. Mortality at 30 days was 4.4%.Complication rates were: stroke 4.3%; myocardial infarction 2.2%; major access site complications 5.4%; more than 2+ aortic regurgitation 9.5%; permanent pacemaker 22%. Actuarial survival at 1 year was 75%.

Conclusions: The subclavian artery is a safe and effective alternative route of access for TAVI with the Corevalve device, with a relatively low 30 day morbidity and mortality in a high risk patient cohort.

031 Transcatheter Aortic Valve Implantation with Edwards Sapien Valve for the Treatment of Degenerated Bioprosthesis: The UK Sapien User Group Experience

Authors: Michael Sabetai[1] V. Bapat[1] UK Edwards Sapien User Group[2]

1 St Thomas' Hospital, United Kingdom; 2 UK Edwards Sapien User Group, United Kingdom

Introduction: The use of bioprostheses for the treatment of aortic valve disease has progressively increased across all age groups. Bioprostheses undergo structural degeneration and may require replacement especially when implanted in younger patients. Such reoperations carry a high risk especially in the elderly with multiple comorbidities. Transcatheter aortic valve implantation (TAVI) as a valve-in-valve (V-in-V) procedure may be a reasonable alternative. We present the V-in-V procedural and clinical results of the UK Edwards Sapien® user group across 10 UK centres. From 2/2009 to 2/2011,31 patients underwent V-in-V TAVI using the Edwards Sapien® for failed aortic bioprostheses.

Methods: Twenty five of those had stented valves, 3 stentless and 3 homografts. The mean age was 79.8±7.9 years (range 29 to 91). The mean logEuroscore was 31.9±10.8 and 92% were NYHA class III or IV. Ten patients presented predominantly with stenosis (AS) and 21 with regurgitation (AR). The transapical (TA) approach was preferred in 26 patients using the Ascendra delivery system and the transfemoral (TF) approach in 5 of them using the Retroflex or the Novoflex delivery system.

Results: Procedural success was achieved in all but two patients (93.5%). The two intraoperative deaths were due to poorly tolerated severe AR; one due to a torn leaflet while crossing the valve retrogradely with the earlier version of the Retroflex system and one due to valve embolisation due to undersizing in a stentless valve. Amongst the survivors there was no 30-day mortality or stroke. In the previously stenotic valves (n=9) there was a significant decrease in the mean gradient post TAVI (49±21.2 to 11.4±5.2, $P<0.001$). None of the patients had more than grade 1 AR. One patient required a permanent pacemaker for persistent AV block. All patients were alive and in NYHA I or II at a median follow up of 218 days.

Conclusions: The use of TAVI as a V-in-V procedure for failed bioprostheses is feasible, safe with excellent short term results.

032 Aortic and Mitral Regurgitation Persist Following Transcatheter Aortic Valve Implantation

Authors: Sion Jones; N.R. Abdulkareem; D. Roy; S. Brecker; M. Jahangiri

St George's Hospital, United Kingdom

Objectives: A reduction in pre-existing mitral regurgitation (MR) is often noted following AVR. However transcatheter aortic valve implantation (TAVI) can be associated with new MR as a result of the prosthesis impinging on the anterior mitral valve leaflet. We aim to assess changes in mitral, and paravalvular aortic regurgitation (AR) following TAVI.

Methods: All patients undergoing TAVI from January 2008 to January 2010 who had complete echocardiographic follow up were included. Patient characteristics and pre- and post-procedure echocardiography findings at 6 and 12 months were recorded.

Results: 67 patients with a median age of 82 years (range 63-95) underwent TAVI and were included. The majority of these cases, 55 (82%), were performed via the transfemoral route, four (6%) were performed through the subclavian artery and 8 (12%) transapically. There were two (3%) deaths within 30 days. Seventeen patients (25%) had moderate/severe AR pre procedure. Moderate/severe AR was seen in nine (11%) of patients at 6 months and six (9%) at 12 months (p=0.24, p=0.21 compared with pre-TAVI). The post procedure AR was paravalvular in all cases. Eleven patients (16%) had moderate/severe MR pre TAVI. Post-TAVI, moderate/severe MR was seen in 8 (12%) patients at 6 months and 6 (9%) of those who had echocardiograms at 12 months (p=0.51, p=0.48 compared with pre-TAVI). 2 patients had worsening of their MR from mild to moderate post TAVI.

Conclusions: There are significant numbers of patients with paravalvular leak in the aortic position at 12 months following TAVI. The overall rate of pre-existing MR was unchanged but in some cases the MR improved while in others it worsened. The long-term importance of these changes remains unknown, and should be clarified before wider application of this new technology.

033 Cerebral Oximetry Monitoring During Transcatheter Aortic Valve Implantation (TAVI)

Authors: H. R. Bilal; A. Tang; M. Hartley; C. Humphries; R. More; S. Roberts; F. Sogliani

Blackpool Victoria Hospital, United Kingdom

Objective: Transcatheter aortic valve implantation (TAVI) is a novel therapy for high risk or inoperable patients with aortic stenosis. Stroke however, remains a significant complication. Transcranial cerebral oximetry (TCO) monitors cerebral oxygenation non-invasively which may be compromised during rapid ventricular pacing (rVP) employed for balloon valvuloplasty (BAV) and valve deployment; a potential cause of stroke. We reviewed the efficacy and significance of TCO monitoring during TAVI.

Methods: From 7/2009 to 2/2011, 30 patients underwent TAVI using Edwards and Corevalve platforms. TCO (CAS Medical FORE-SIGHT) continuously monitored regional oxygen saturation (rSO2) of both frontal lobes. Absolute safety threshold was 55%. rVP was conducted at 180 bpm to diminish native systolic ejection.

Results: Mean age was 79±12 years with a male predilection (n=17). Mean Logistic Euroscore was 16±4. TCO signal acquisition was uniformly excellent. Mean duration of rVP was 40±32 seconds for BAV and 17.5±5 seconds for deployment. Mean drop in rSO2 was 6.1±3.3% during BAV and 3.4±1.3% during deployment. rVP during valve deployment was shorter ($p<0.001$) and changes in rSO2 less pronounced compared to valvuloplasty ($p<0.001$). Baseline rSO2 recovery occurred 47±25 seconds after termination of rVP. rSO2 remained above absolute threshold in all cases. One patient died in hospital and no neurological event was observed.

Conclusions: Regional cerebral oxygenation reacts promptly to functional circulatory arrest during rapid pacing in TAVI. Reduction in rSO2 was acceptable remaining above safety threshold and displayed rapid recovery. This correlated with an absence of neurological event in our series. Routine TCO during TAVI is recommended to minimize procedural stroke.

034 Clinical and Procedural Outcomes from Transcatheter Aortic Valve Implantation via the Trans-aortic Approach

Authors: M. Bhabra[1] S. Khogali[2] D. Hildick-Smith[3] S. Brecker[4] M. Jahangiri[4] C. Mario[5] N. Moat[5] J. Cockburn[3]

1 Royal Wolverhamptom NHS Trust, United Kingdom; 2 Brighton, United Kingdom; 3 Royal Sussex County Hospital, United Kingdom; 4 St George's Hospital, United Kingdom; 5 Royal Brompton and Harefield NHS Trust, United Kingdom

Objectives: Transcatheter Aortic Valve Implantation (TAVI) is usually undertaken in patients for whom conventional aortic valve surgery is considered too high risk. The CoreValve and Edwards Sapien aortic valve prostheses have been successfully used in this patient group. Vascular access using these valves is usually via the femoral or subclavian routes. However, in patients in whom vessel calibre is <7mm, a direct or trans-aortic approach is an alternative option. We describe the combined procedural and clinical outcomes for patients who have undergone TAVI via trans-aortic approach data, from four UK TAVI centres. Methods 29 patients underwent trans-aortic TAVI. Procedural data and outcomes were collected prospectively on dedicated databases.

Results: Patients were aged 79.8±5.6 and 38.8% were male. Mean logistic EuroSCORE was 19.9±16. Procedural success was achieved in 100% of cases. 39% had undergone previous bypass surgery. 93% were inserted into native valves and 7% into previous bio-prosthetic valves. There were no procedural related deaths and only 3 (10.3%) at 30 days. 3 (10.1%) required pacing (1-8 days post procedure) and 1 (3.4%) had a stroke at day 18. (Table 1).

N	29	Aortic Valve area cm^2 (Mean±SD)	0.71±0.19	AR post procedure		Complications	
Age (Mean±SD)	79.8±5.6	Previous CABG (%)	39	None (%)	72.5	Peri-procedural Infarct (%)	0
Males (%)	38.8	EuroSCORE (Mean±SD)	19.9±16	Mild (%)	24.1	Major vascular injury (%)	0
Reason for direct aortic approach		NYHA class (Mean±SD)	3.4±0.6	Moderate (%)	3.4	CVA	3.4 (%)
Vessels <7mm (%)	55	Valve size		Severe (%)	0	PPM (%)	10.1
Peripheral vascular disease (%)	45	26mm (%)	50	Need for 2nd valve (%)	0	Death	
Implantation		29mm (%)	50			Procedure related	0
Native valve (%)	93	Procedural success (%)	100			30 day (N±%)	3 (10.3)
Valve in valve (%)	7						
Aortic Peak Gradient mmHg (Mean±SD)	62.1±22.6						

Conclusions: Trans-aortic TAVI is associated with high success rates and low complication rates.

035 Transcatheter Aortic Valve Implantation is Associated with Significant Regression of Left Ventricular Hypertrophy - A One Year Follow-up Study

Authors: A. Alassar; R. Patel; A. Marciniak; N. Abdulkareem; O. Valencia; M. Jahangiri

St George's Hospital, United Kingdom

Objectives: Despite the increase in Transcatheter Aortic Valve Implantation (TAVI) procedures over the last few years, little is known about the effect of TAVI on left ventricular (LV) function and remodeling. The aim of this study is to assess the effect of TAVI on echo parameters of LV size, wall thickness, systolic and diastolic function. Methods Between January 2008 and January 2011, we studied 80 patients [age 82 (78-87) year] with severe aortic stenosis (AS) before and one year after TAVI procedure using Transthoracic echocardiography. The mean LV ejection fraction of the population was 51. This retrospective study involved three patients with poor LV ejection fraction (EF < 45%) and three patients with severe mitral regurgitation (MR) before TAVI. Left ventricular dimensions, left atrial size, LV ejection fraction, LV diastolic function and wall thickness were measured.

Results: One year all-cause mortality was 17.5%. The LV mass decreased from 239±74 g/m^2 at baseline to 201±55 g/m^2 at one year follow-up ($p < 0.05$). The diastolic interventricular septum thickness (IVSd) was significantly decreased one year post-TAVI compared with pre-TAVI values (1.25±0.21 vs 1.09±0.20, $p < 0.001$). At one year follow-up the maximum wall thickness (Max WT) decreased from 1.27±0.26 to 1.12±0.18 ($p < 0.001$). There was no significant change in the left ventricular ejection fraction, LV end systolic diameter, LV end diastolic diameter, left atrial size, fractional shortening and left ventricular diastolic function. There were no significant changes in MR.

Conclusions: A significant regression of left ventricular hypertrophy was found one year following TAVI. However, this regression was not associated with changes in LV systolic function, LV diastolic function, LV size or changes in MR.

036 One Year Mortality Following Transcatheter Aortic Valve Implantation: Incidence, Predictive Factors and Causes of Deaths

Authors: A. Alassar; J. Davey; S. Brecker; M. Jahangiri

St George's Hospital, United Kingdom

Objectives: Large registries have shown that transcatheter aortic valve implantation (TAVI) can be performed in selected high-risk populations with a high procedural success rate of more than 90% and a 30-day mortality rate ≤10% with varying rate of complications. Little is known about one year mortality after TAVI. The aim of this study was to establish the incidence, predictive factors and actual causes of one year mortality following TAVI.

Methods: Between January 2008 and January 2011, a total of 82 patients with symptomatic severe aortic stenosis underwent TAVI. The route of access was transfemoral in 66 patients (80%), transapical in 9 patients (11%), subclavian in 4 patients (5%), transaortic in 2 patients (3%) and axillary in 1 patient (1%). Baseline characteristics and procedural complications were recorded. Causes of deaths were collected via the bereavement office and the coroner's office.

Results: One month and one year mortality was 4.8% and 17.07%, respectively. Postoperatively, 16 patients (19.5%) required permanent pacemaker implantation. Pre-operative irregular heart rhythm (OR 3.78) and post-operative para-valvular aortic regurgitation (OR 3.45) were independent factors for one year mortality after TAVI. At one year, the most frequent causes of death were bronchopneumonia, cardiac failure and acute myocardial infarction.

Conclusions: One year mortality following TAVI was 17.07%. Pre-operative irregular heart rhythm and para-valvular aortic regurgitation were independent predictive factors. The main causes of death were bronchopneumonia and cardiac disease.

037 Cerebral Desaturation During Transcatheter Aortic Valve Implantation (TAVI)

Authors: C.A. Brodie[1] R.J.B. Allan[2] S. Asopa[2] P.M. Robbins[2] M.J. Bennett[2]

1 Peninsula College of Medicine and Dentistry, United Kingdom; 2 South West Cardiothoracic Centre, United Kingdom

Objectives: TAVI has become a well-recognised alternative to surgical valve replacement in high-risk patients with severe aortic stenosis. However cerebral complications including TIA, stroke, neurocognitive dysfunction and deterioration of dementia occur in up to 10% of cases. This is attributed to micro-emboli during balloon deflation and expansion of the valve prosthesis, and manipulation of the aortic valve/root by guide wires and catheters. The percentage change in cerebral oxygen saturation (ScO2) has been linked to outcome after cardiac surgery. Currently the role of cerebral hypo-perfusion as a contributing factor to neurological insult after TAVI, as a result of rapid left-ventricular pacing intra-procedurally, has not been described.

Method: We used the NIRO-200NX monitor (Hamamatsu Photonics UK Ltd) to monitor ScO_2 during TAVI cases under GA. Baseline readings (1Hz) were taken once haemodynamic stability had been achieved. The period VT included pacing for balloon valvuloplasty, deployment of the valve (Edwards-Sapien) and removal of the introducer device.

Results: 9 patients (6M, 3F), with an average age 81±6 yrs, were studied. 3 patients had poor/mod LV and 2 had a past history of CVA. Valve was trans-femoral (2) and trans-apical (7). None required extracorporeal circulation. Episodes of VT per patient was 4±1.8. 4 patients had desaturation greater than 10% in one or both cerebral hemispheres lasting >1 min (range 0-114s). Only 1 patient had a short duration (40s) of desaturation greater than 20% below baseline.

Discussion: This is the first report of cerebral desaturation during TAVI. The degree and duration of cerebral desaturation observed in this small series does not currently support the theory that this may significantly affect postoperative recovery. Response of ScO2 post-deployment of TAVI and comparison with cases done with extracorporeal support will be presented.

038 The EuroSCORE: A Neglected Measure of Medium Term Survival Following Cardiac Surgery

Authors: Ahmed Habib[1] A. Dhanji[1] K. Baig[1] S. Gallagher[1] W.I. Awad[2] A.J. Wood[2] R. Uppal[1]

1 Barts and the London NHS Trust, United Kingdom; 2 Barts and the London NHS Trust, United Kingdom

Introduction: The euroSCORE is used to predict in-hospital mortality following cardiac surgery. There is limited data assessing the ability of euroSCORE to predict medium to long term mortality. We aimed to test the ability of euroSCORE to predict medium term survival following cardiac surgery.

Methods: We analysed prospectively collected data from 9022 consecutive patients undergoing cardiac surgery in an urban tertiary cardiac centre between 2003 and 2009. All cause mortality following cardiac surgery was determined via Office of National Statistics data. Median follow-up 2.92 years. Kaplan Meier curves were used to calculate the 6 year actuarial survival while the log-rank test was used to calculate the p value.

Results: The mean age was 66.86 years, 73.7% were males. The cases were grouped according to the euroSCORE into 0-5(n=5364), 6-10(n=3059), 11-15(n=506) and >16(n=93). The 6 year survival was 88.5%, 71.8%, 52.5% and 39.5% respectively ($p<0.0001$).

Conclusions: EuroSCORE is a sensitive method for predicting survival in the medium to long term.

039 Modified EuroSCORE: Should High-Risk Patients be Excluded from Governance Analyses?

Authors: Stuart Grant[1] G.L. Hickey[1] I. Buchan[1] B. Bridgewater[2]

1 University of Manchester, United Kingdom; 2 University Hospital of South Manchester, United Kingdom

Objectives: Cardiac surgeon and centre outcomes are routinely analysed and published in the UK by the Society for Cardiothoracic Surgery (SCTS). These governance analyses have been risk-adjusted by modifying the logistic EuroSCORE; procedure specific variables have been incorporated to improve the clinical validity, calibration and discrimination of the model. However, despite improvements in risk-adjustment, concerns remain that such analyses encourage inappropriately risk-averse clinical decisions. The aim of this study was to investigate whether clinically defined high-risk sub-groups should be excluded from governance analyses on statistical grounds.

Methods: All SCTS data from April 2008 to March 2011 was analysed. The modified logistic EuroSCORE (EuroSCORE) was calculated for each record. Model calibration and discrimination were assessed for all patients and in pre-defined clinical high-risk sub-groups.

Results: During the study period 108,802 cardiac surgical procedures were performed with a mortality of 3.1%. The emergency/salvage, major aortic and multiple redo sub-groups contained sufficient outcomes to assess model performance. There were 3550 emergency/ salvage, 4,624 major aortic, and 946 multiple redo records; the mortality rates in these sub-groups were 17.5%, 9.7% and 15.1% respectively. Overall the mEuroSCORE discriminated well with an AUC of 0.81.The AUCs for emergency/salvage, major aortic and multiple redo sub-groups were 0.68, 0.77, and 0.74 respectively. EuroSCORE calibration was good overall but poor for emergency/salvage procedures. Removing emergency/salvage procedures from the major aortic and multiple redo sub-groups improved calibration.

Conclusions: The modified logistic EuroSCORE performed well overall, however this study demonstrates, on statistical grounds, that emergency/salvage procedures should be excluded from individual surgeon or centre governance analyses with respect to mortality.

040 Performance of EuroscoreII in Elective and Emergency Cardiac Surgery: A Pilot Study

Authors: A. Barua[1] W. Elmahdy[1] R.U. Nair[2]

1 Leeds General Infirmary, United Kingdom; 2 Leeds General Hospital, United Kingdom

Objective: We carried out a pilot study to compare the predictability of in-patient operative mortality based on EuroSCORE II, standard and logistic EuroSCORE.

Methods: A prospective observational design was used. Between August 1, 2011and November 15, 2011, twenty five consecutive adult patients undergoing elective and emergency heart surgery with cardiopulmonary bypass under one consultant were preoperatively scored using the standard , logistic EuroSCORE and EuroSCOREII.

Results: Among 25 consecutive patients, median age was 69 years (45-83 years) and Male: Female 17: 18. Two patients died in this group as given in table 1 below. We had another patient (redo AVR & MVR, longstanding cardiac failure) who had standard EuroSCORE 18, logistic EuroSCORE 48 and EuroSCOREII 22 who made of safe recovery. We feel that EuroscoreII should include other systemic factors for making predictability more reliable

Conclusions: It is known that logistic EuroSCORE overestimated mortality significantly. EuroSCORE II even though has a better predictability, it still lacks important factor such as multi-organ impairment which if included should enhance its reliability as seen in our pilot study.

Age	*Sex*	*Operation*	*Standard Euroscore*	*Logistic Euroscore*	*EuroscoreII*	*Cause of death*
75	Male	Salvage type A Aortic dissection repair	18	64	57.90	Multi-organ failure
68	Male	AVR for bacterial endocarditis, removal of infected pacing wire, on haemodialysis	15	80.44	53.41	Ischaemia of fistuloplasty arm and septicaemia

041 TEE Guided Continuous Monitoring of Renal Perfusion During OPCAB as a Perioperative Predictor of Renal Dysfunction - A Pilot Study

Authors: Saikat Bandyopadhyay

Medica Superspecialty Hospital Kolkata, India

Objectives: There is no established means of monitoring renal perfusion perioperatively. Also locating the kidney with TEE is difficult. In this study we tried to evaluate the ease of locating the kidney with TEE using a new technique and monitor pulsed wave Doppler derived continuous renal blood flow velocity indices - Renal Resistive Index (RRI) and Pulsatility Index (PI) as a surrogate of renal blood flow measurement.

Methods: In this prospective observational study which included 30 consented patients undergoing elective OPCAB we attempted to locate the left kidney using TEE from a transgastric short axis view alone in the first 15 cases and also using a new technique we termed as the 'Z' technique in the next 15 cases and compared the ease of locating the left kidney among the two groups. We also continuously monitored RRI and PI during different vessel grafting and compared the indices among the groups. All patients were followed up in the ICU till hospital discharge to find any positive correlation between RRI ≥ 0.78 and/or PI ≥ 1.8 during surgery and development of acute kidney injury (AKI).

Results: The mean time to locate the left kidney using the 'Z' technique { 25 (±17) seconds } was significantly lesser than the other group { 251 (±228) seconds } (p value = 0.0007). Moreover with the 'Z' technique the left kidney could be located with 100% accuracy with no failures. Mean RRI and PI values overall were 0.61 (± 0.1) and 1.1 (± 0.1) respectively. The individual mean values of RRI and PI during various vessel grafting were not significantly different. 3 patients had a transient rise of RRI ≥ 0.78 and 2 (amongst the 3) had a rise of PI ≥ 1.8 which returned to normal before the end of surgery. None of these 3 patients developed AKI.

Conclusions: The 'Z' technique simplifies TEE guided visualization of the kidney. In more than 90% cases visualization was possible in ≤ 1 minute. Transient rise of RRI ≥ 0.78 and/or PI ≥ 1.8 was not associated with AKI.

042 A Randomised Controlled Trial of Acid Base Management During Profoundly Hypothermic Cardiopulmonary Bypass

Authors: V.B. Dronavalli[1] A. Menon[1] T. Jones[2] J. Mascaro[1] S. Matthews[1] D. Green[1] T. Oelofse[1] R.S. Bonser[1]

1 University Hospital Birmingham, United Kingdom; 2 Birmingham Childrens Hospital, United Kingdom

Objective: Whether pH stat acid-base management during cooling increases cerebral metabolic suppression in adults is unknown.

Methods: In an open-label randomised controlled trial, patients undergoing arch replacement with protocol-based anaesthetic and perfusion management, underwent cooling to 150C using α-stat (non-temperature-corrected (non-TcPaCO2 4.5-5.5 kPa) or pH-stat (TcPaCO2 4.5-5.5 kPa) achieved by 5% CO2 addition. We measured left common carotid blood flow (LCCBF), left rSO2, arterial and left jugular bulb oximetry and glucose. The primary outcome measures were time to 50% O2 extraction (T1/2O2EX) and percentage change in O2 extraction between 35 and 25oC(δ-%O2EX).

Results: Forty patients were randomised 1:1. At 30-days there was 1 death and 1 stroke (2.5%). During cooling to 20°C TcPaCO2and LCCBF (243±19 vs 128±10ml.min^{-1}p<0.001) were higher in pH-stat with lower perfusion pressure(mmHg) 50±2 vs 66±4 (p=0.006) and lower LCC vascular resistance (p= 0.0015). RSO2 increased significantly in both groups (p<0.001) with a greater increase in pH-stat (p<0.01). The LCCBF x [V-A] O2 product fell significantly in both groups and was higher in the pH-stat group at 20oC 134±15 vs 82±11 p=0.011. T1/2O2EX was shorter in pH-stat 10.7(6.7-14.9) vs 17(12.7-25) min p=0.02). δ-%O2EX35-25 was 59%±8 in pH and 24%±11 in α p=0.0161. Below 25oC flow-metabolism matching was deranged in both groups. δ-GluEX35-25 (mmol/L) was 0.13±0.0 in pH-stat and -0.02±0.0 in α-stat p=0.19.

Conclusions: In adult humans, pH-stat cooling increases carotid blood flow, reduces vascular resistance, increases rSO2 and accelerates the fall and percentage reduction in O2 extraction. This may be advantageous in aortic arch surgery provided microembolic load is not increased.

043 Renal Inflammation, Oxidative Stress and Apoptosis during Acute Kidney Injury: Effects of Hypercholesterolaemia and Cardiopulmonary Bypass

Authors: G.J. Murphy[1] P. Sleeman[1] N.N. Patel[1] H. Lin[1] G.I. Welsh[2] G. Walkden[1]

1 Bristol Heart Institute, United Kingdom; 2 University of Bristol, United Kingdom

Background: Chronic kidney disease (CKD) is the principal risk for post cardiac surgery acute kidney injury (AKI) in clinical studies. We sought to establish how hypercholesterolaemia (HC), an suggested aetiological factor in the development of CKD from clinical studies would influence the development of post cardiopulmonary bypass (CPB) acute kidney injury (AKI) in a swine model.

Methods and Results: Twenty eight pigs were allocated to Sham procedure, CPB, Sham+HC, or CPB+HC, with recovery and reassessment at 24 hours. HC was induced by a 12-week diet of 2% cholesterol, 15% lard and cholic acid. Pre-intervention mean (SD) total cholesterol levels in HC and non HC pigs were 1.5 (0.7) mmol/L and 11.4 (0.6) mmol/L respectively. CPB resulted in reduced creatinine clearance, an index of GFR, for up to 24 hours, and this was associated with endothelial dysfunction, concomitant activation of pro-inflammatory/ redox (NF-kB, iNOS, ET-1) and pro-survival pathways (PI3k-Akt-mTOR) an apoptosis. Sham+HC pigs did not develop reductions in GFR characteristic if CKD. They did however demonstrate increased pro-inflammatory and pro-apoptotic signaling, neoangioagenesis and tubular proliferation with suppression of pro-survival signaling. HC induced changes conferred protection against post CPB AKI by maintaining endothelial homeostasis, GFR and preventing the loss of ATP and tubular apoptosis attributable to CPB. Our results also suggest that IL-6 may be a useful biomarker for the detection of post CPB AKI, but that NGAL may be falsely elevated where there is existing intra-renal oxidative stress, as was observed in HC pigs in the current study.

Conclusions: In an apparent paradox oxidative stress in the setting of HC prevents post CPB acute kidney injury in swine via up regulation of NF-kB, iNOS and VEGF. Preconditioning was not effected via the PI3K-Akt pathway.

044 Audit of Paravertebral and Epidural Analgesia Following Open Thoracic Surgery

Authors: Lynn Fenner; M. Molyneux; N. Rasburn; D. West

Bristol Royal Infirmary, United Kingdom

Objectives: Our institution introduced paravertebral infusions with morphine PCA for thoracic surgery over a year ago. A protocol for pain is used for patients with a paravertebral block This audit compared the efficacy with thoracic epidurals.

Methods: Between May and August 2011, Anaesthetists, Recovery Staff and Acute Pain Nurses prospectively collected data for adults receiving epidural or paravertebral infusions for open thoracic surgery. Pain scores were measured on arriving and leaving recovery, and on days 1, 2 and 3 post-operatively. Nausea and vomiting, hypotension requiring fluid boluses and patient satisfaction scores were also recorded. Continuous data are reported as mean (standard deviation), and tested for significance with the 2-tailed t test. Categorical data were tested with Fisher's exact test.

Results: Paravertebral infusions were used in 24 patients (23 lobectomies and 1 pneumonectomy), while 17 patients received epidurals for lobectomies. They had similar ages (73 (64.5-77) v 73(69-78) years (median (IQR)). There were fewer males in the paravertebral group (43% v 75%).

Pain Scores (0 - 10)	*Paravertebral (n=14)*	*Epidural (n=13)*	*p value*
Recovery Initial	3.54 ±3.84	4.08 ±3.66	0.72
Recovery Final	2.61 ±3.01	2.76 ±2.92	0.90
Day 1	4.00±2.18	4.00 ±2.55	1.00
Day 2	3.36 ±2.37	4.15±2.76	0.43
Day 3	3.00 ±1.80	4.00 ±2.55	0.25

In the epidural group, a higher percentage of patients received fluid boluses to treat hypotension in recovery (57% and 5 % respectively, p=0.12) and on the ward (50% and 8%, p=0.03). There was also a higher incidence of nausea and vomiting on the first post operative day in the paravertebral group (p=0.15). Patients with paravertebral blocks had higher satisfaction scores on day 1 (9(8-9) v 8.5(8-10) (p=0.22)).

Conclusions: Paravertebral block and PCA offers analgesia with a better haemodynamic profile. This compares favourably to published data which suggests that analgesia between the two groups is similar. The improvement in patient satisfactions may be attributed to the introduction of the protocol. The reduction in use of fluid boluses reaches statistical significance on the ward. In other specialities, fluid optimisation has been associated with a reduction in length of stay.

045 Paravertebral Versus Epidural Analgesia for Post-thoracotomy Pain Management

Authors: Eustace Fontaine; M. Diab; I. Whittle; M. Shackcloth; M. Carr; S. Scholz; J. Kendall; T. Ridgway; G. Russell

Liverpool Heart and Chest Hospital, United Kingdom

Objectives: Continuous thoracic epidural analgesia has been considered to be the gold standard for control of post-thoracotomy pain. In this study we evaluated how the combination of continuous paravertebral infusion and morphine PCA compared to thoracic epidural.

Methods: In a single surgeon experience, patients undergoing thoracotomy and lobectomy were given the option of either device. A retrospective analysis of a prospectively collected thoracic data base and pain charts was undertaken to evaluate efficacy of analgesia and post-operative complications. Thoracic epidurals were inserted by the anaesthetist and a continuous infusion of fentanyl and levobupivacaine commenced. A standard epidural set was utilised by the surgeon for percutaneous placement of the extrapleural paravertebral catheter immediately after thoracotomy with the catheter on the neck of sixth to fourth ribs. An initial maximum dose of 15 to 30 ml levobupivacaine was given followed by a continuous infusion of 0.25% levobupivacaine not exceeding 10 ml/h. A standard morphine PCA was utilised in the paravertebral group.

Results: There were 76 patients in the paravertebral group and 53 in the epidural group. The median age for the paravertebral group was 68 years (range 23-87) compared to 70 years (range 45-85) for the epidural group; p-value 0.37. There were no statistically significant differences in BMI and pre-operative FEV1. The median post-operative length of stay was 6 days (range 3-122) in the paravertebral group and 7 days in the epidural group (range 3-61), p-value 0.11. There were 3 readmissions to the intensive care in each group; p-value 0.67. There were no in-hospital deaths in either group. There were no statistically significant differences in pain scores measured from the first to third post-operative day.

Conclusions: Paravertebral and PCA combination achieved equivalent pain control to epidural and there was a trend to decreased hospital length of stay with paravertebral usage.

046 The Quality of Post-operative Pain Relief with Thoracic Epidural Analgesia in Bilateral Lung Transplant Recipients

Authors: I.J. Baxter; S.T. Ahmed

1 Freeman, Newcastle upon Tyne, United Kingdom

Objectives: Thoracic epidural analgesia (TEA) is believed to improve outcomes in patients undergoing lung transplantation, reducing duration of mechanical ventilation, length of ICU stay and respiratory complications. However there is a paucity of published data on the quality of pain relief provided. We have examined the quality of acute post-operative analgesia provided in our institution.

Methods: This is a single centre retrospective study looking at the quality of pain relief with TEA in bilateral lung transplant recipients. We searched our local acute pain service database for patients who had received epidural anaesthesia following bilateral lung transplantation, between June 2006 and September 2011, identifying 105 patients. Pain scores were recorded on an 11 point numeric rating scale. All bilateral lung transplants were tranplanted via a clam shell incision with the use of cardio-pulmonary bypass, as such all epidurals were inserted in the post-operative period.

Results: 105 patients received epidural analgesia. More were male than female (53% vs 47%), with a median age of 33.6 years and a range of 16.4 to 63.4 years old (mean 37.9%). They were inserted in the mid-thoracic region, mainly in asleep patients (73.3%) and in the lateral position (76.2%) The database generated pain scores for 685 patient episodes.

Pain (NRS Score)	*Rest (% pt episodes)*	*Movement (% pt episodes)*
None (0)	45.3%	15.0%
Mild (1-3)	38.4%	41.8%
Moderate (4-6)	14.5%	36.4%
Severe (7-10)	1.9%	6.9%

The epidurals were insitu for a median of 96 hours. Mainly being removed for commencement of oral analgesia (45%) or 'other' (19%) reasons.

Discussion: 16.4% of patients episodes report mod-severe pain at rest with 43.3% of patient episodes reporting mod-severe pain on movement. It is pain on movement inhibiting deep breathing and coughing that may result in increased respiratory complications. Furthermore there may be an association between acute post-operative pain and the high incidence of chronic pain in lung transplant patients. Focusing on improving this aspect of post-operative care may further improve patient outcomes.

046a Effectiveness of Postoperative Analgesia in Lung Resection Patients

Authors: Walker, E.J.[1] Matzelle, S.[2] Weightman, W.[2]

1 Gartnavel General Hospital, United Kingdom, 2Sir Charles Gairdner Hospital, Perth, Australia

Objectives:

1. To establish the effectiveness of postoperative analgesia in lung resection patients in a thoracic referral centre.

2. To explore if the use of thoracoscopic surgery and regional analgesic techniques have impacted on postoperative pain control.

Methods: This follow up audit was registered with the local quality improvement service. 37 patients undergoing lung resection procedures were identified for the period 15th March 2010 to 24th January 2011. A retrospective review of 30 case notes was performed between 14th February and 31st March 201[1] 7 case notes were inaccessible. Data are compared with audit data from 2005 practice. Statistical analysis was performed using Students t-test.

Results: 30 patients with a mean age of 62 years underwent lung resection in the 45 week period; 7/30 (23%) had video assisted thoracoscopic surgery (VATS), 23/30 (27%) had open procedures. Regional analgesic techniques were performed in 29/30 (97%) of cases; 2 3 (79%) of these were continuous catheter techniques, increased from 61% in 2005. Pain scores (0-10 numerical scale) were comparable for the two study periods but opioid use was significantly reduced during the first 24 hours in the 2010 study (see table).

	2005	*2010*	*p value*
Pain score 0-24 hrs	2.8	2.8	.9
Pain score 24-48 hrs	1.9	1.8	0.9
Mean fentanyl equivalent dose 0-24 hrs	1411mcg	871mcg	0.006
Mean fentanyl equivalent dose 24-48 hrs	981mcg	617mcg	0.13

18/30 (60%) patients received patient controlled analgesia (PCA) postoperatively. Those patients receiving PCAs had significantly higher first day median pain scores (3.6 vs. 1.4, p=0.01) and opioid use (mean equivalent fentanyl dose 1275mcg vs. 265mcg ($p<0.01$)) than those receiving enteral opioids. Opioid use and pain scores demonstrated no significant difference when comparing VATS and open procedures. However, length of stay (LOS) was reduced with VATS, 4 days vs. 6 days for open procedures.

Conclusions: Management of postoperative pain for lung resection patients is good. Use of continuous regional analgesic techniques and VATS procedures have increased since 2005. Patients have lower opioid requirements now than in 2005 and have reduced LOS with VATS procedures.

047 Leader as Educator - Developing High Performance Cardiothoracic Trainers

Authors: Chris Munsch[1] L. Hadfield Law[2] T. Graham[3] D. O'Regan[1] S. Livesey[4] M. Lewis[5]

1 Leeds General Infirmary, United Kingdom; 2 Independant Evaluator, United Kingdom; 3 University of Birmingham Hospital, United Kingdom; 4 Southampton General Hospital, United Kingdom; 5 Brighton, United Kingdom

Objectives: The Leader as Educator Programme (LasE) was created for cardiothoracic surgeons and focuses on their role in developing successors, through the provision of a safe and dynamic learning environment. The overall aim of the project is to establish an educational leader in every cardiac centre.

Methods: A purpose designed multi activity programme was developed and shared with 10 selected 'pioneers'. The programme covered advanced aspects of teaching, coaching and mentoring and was delivered by a rich combination of methods. LasE was independently evaluated by an active, cyclical process, based on Kirkpatrick's model, gathering information from as wide a perspective as possible eg questionnaires, semi structured interviews, review of reflective writing and action plans.

Results: Overall, the evaluation feedback was unanimously enthusiastic. All pioneers are convinced of the value of LasE, to cardiothoracic training in this country and their own professional development. However, pioneers found that putting what they learned into practice to be difficult and time consuming within the constraints of clinical and other commitments.

Conclusions: Strategies to develop the programme further include: comprehensive needs analysis, structured approach to selection of future participants, more emphasis on action planning, network formation with mentoring support strategy, and development of an e-portfolio.

048 Are CABG Patients Well Informed by the Internet?

Authors: A.K. Kar; R.H.J. Trimlett; J.R. Finch

Royal Brompton and Harefield NHS Trust, United Kingdom

Objectives: The internet is an unprecedented educational resource, utilised by more than 2/3 of patients but concerns remain about quality of medical websites. Patients recommended for CABG commonly seek out online information. Acknowledging the importance of this search in the decision-making process we objectively assessed the content of popular sites.

Methods: Leading search engines Google, Bing and Yahoo were searched using the term "CABG". 50 leading 'hits' from each were reviewed, excluding those deemed irrelevant, inaccessible or isolated video or journal content. Quality accreditation with Health On the Net Foundation certificate (HONcode) was verified. Readability was assessed using Gunning-Fog Index (GFI) and Flesch Reading Ease Score (FRES). Accessibility, usability and reliability were quantified using the LIDA tool with authorship, references and update interval noted. Composite scores were calculated to determine overall ranking.

Results: Of 40 relevant websites, 3 were HONcode-certified. Readability indices averaged GFI 12.3(SD 2.2) and FRES 51/100(SD 11), akin to reading a broadsheet newspaper. LIDA scores averaged 61/144 (SD 13) and whilst accessibility (78%, SD 13) and usability (66%, SD 17) were typically high, reliability was poor (26%, SD 23), with authorship often unstated, absent references and infrequent updating.

Conclusions: Marked variability was observed, with no correlation between search ranking and composite score. Leading 'hit' Wikipedia.org ranked only 18/40 overall. Many forums with no evidence of medical adjudication were highly popular but scored poorly, often containing misleading information. 7/10 lowest ranked sites however were from academic institutions. With patients increasingly 'googling' their proposed treatment, the onus is on surgeons to ensure accreditation and quality of their society or institutional websites by utilising these tools. We propose that patients be recommended our top-scoring sites at the time of consultation.

049 Cardiothoracic Wound Clinic Audit of Patients Experience

Authors: P. Njoki; S. Datta; P.A. Gowland

Manchester Heart Centre, United Kingdom

Objective: This is a report of a survey conducted to explore whether an out patient cardiothoracic wound clinic was an effective way to manage patients presenting with Surgical Site Infection post cardiothoracic surgery. Background A cardiothoracic wound clinic was set up to encourage early discharge, offer specialist outpatient care, reduce readmission rates and facilitate timely readmission if appropriate. It was envisaged that the provision of this service would enhance the quality of care given and ensure cost effective and optimum use of beds. Effectiveness in relation to readmission and early discharge had already been demonstrated by audit, but how this service worked from the patients perspective had not so far been established.

Methods: A patient satisfaction questionnaire was administered to 21 patients by post or hand delivery after their clinic visit. Questions asked were about themselves, the wound clinic, the staff, their treatment and overall rating of the care provided. Findings Broad support for the staff and the wound clinic in this Foundation Trust.

Conclusions: The clinic has provided a medium for timely discharge and ongoing support. The use of an advanced Nurse Practitioner who is also a qualified non medical prescriber and specialist in wound care, and a Staff Grade Doctor who has an interest in wound care, has enabled a one stop approach and has now been demonstrated to meet the needs of patients with complex wounds post cardiac surgery, enabling them to go home but have ongoing support.

050 Patient's Experiences of a Pre and Post Surgery Rehabilitation of Lung Cancer (ROC) Programme: A Qualitative Interview Study

Authors: Kumara Krishna Raju Jayaramakrishnan[1] B. Naidu[1] A. Parsons[2] A. Bradley[1] L. Reaper[1] C. Jordan[3] P. Aveyard[4] G. Dowswell[5] J. Dunn[6]

1 Heartlands Hospital NHS Trust, United Kingdom; 2 Primary Care Clinical Scienecs, University of Birmingham, United Kingdom; 3 Worcester Royal Infirmary, United Kingdom; 4 Primary Care Clinical Sciences, University of Birmingham, United Kingdom; 5 Primary Care Clinical Services, University of Birmingham, United Kingdom; 6 Warwick Medical School, United Kingdom

Background: Postoperative pulmonary complications (PPC) after lung cancer surgery increase the risk of ICU/HDU admission, morbidity and mortality. The current rate of PPC at a large UK thoracic surgery centre is 15%. We piloted a pre- and post-surgery pulmonary rehabilitation (ROC) programme at two sites, with enhanced information and smoking cessation support and conducted qualitative interviews to investigate patient's experiences and programme acceptability.

Methods: Patients were purposefully sampled to represent a range of demographic and clinical characteristics. Interviews were semi-structured and covered a range of topics including: involvement in the ROC programme; attitudes towards the programme; acceptability of the programme format and ideas for design changes. Patients were interviewed in their home. Interviews were transcribed and data was analysed using the framework approach.

Results: We interviewed 12 patients (6 male, 6 female; from both community-based and hospital-based programmes) between 3 and 12 months after surgery. Patients found the programme highly acceptable and attributed emotional, informational, motivational and physical benefits to their participation. No patients suggested changes to the format or delivery of the programme.

Conclusions: From the patient perspective, the ROC programme was a success and proved beneficial in a number of dimensions. Patients are willing to return for rehabilitative care after surgery and find this an important part of their recovery, although currently this is not part of standard care.

051 Thoracic Day Case Surgery - The Patient Experience

Authors: C. Goatman; A. Nasir; P. Krysiak

University Hospital of South Manchester, United Kingdom

Objective: Day surgery has been shown to be both favoured by patients and have economic benefits to the institution. As a centre undertaking regular Thoracic surgery procedures on a day case basis, we set out to assess the strength of our current practice.

Methods: Patients were reviewed from December 2009 - January 2011 with data obtained from theatre lists, telephone and email surveys of patients and Thoracic surgery units across the UK.

Results: Total of 65 patients was identified and 25 responses obtained. Male to female ratio was 18:7. Total of 25 day case procedures were performed; bronchoscopy +/- biopsy 11, mediastinoscopy 8, endobronchial stent 2, Argon plasma coagulation 2, EBUS TBNA 1. 23 out of 25 patients (92%) surveyed were successfully same day discharged. 92% felt the post-operative recovery time in hospital was sufficient. 84% were highly satisfied and had no problems following discharge. 84% would recommend it to someone else. National email survey was carried out with questionnaire sent to 24 national centres, and of 9 responses received in the allotted time 8 out of 9 units were performing regular Thoracic day case surgery.

Conclusions: A high level of patient satisfaction was demonstrated. Day case Thoracic surgery is a patient centred and favoured approach, which is well utilized by UK thoracic surgeons.

052 The Effectiveness of Incentive Spirometry in Patients Following Thoracotomy and Lung Resection, Including Those at High Risk

Authors: P. Agostini[1] H. Cieslik[1] B. Naidu[1] S. Singh[2]

1 Heart of England NHS Foundation Trust, United Kingdom; 2 Coventry University, United Kingdom

Background: Although postoperative physiotherapy is considered of value in the care of thoracic surgery patients, evidence for the specific interventions and in whom they are necessary remains lacking.

Methods: 148 patients undergoing thoracotomy and lung resection participated in a prospective, pragmatic, single-blind RCT, including a subgroup of high risk patients (n=89) defined by the independent factors; age >75 years, ASA score >3, COPD, smoking, BMI >30. All patients received postoperative breathing exercises, airway clearance and mobilisation; the control group performed thoracic expansion exercises, and the intervention group incentive spirometry.

Results: No significant difference was observed in drop in FEV1 (intervention 40%, control 41%, 95% CI -5.3 to 4.2), or frequency of PPC (intervention 12.5%, control 15%, 95% CI -7.9 to 12.9) (p=0.817 and p=0.803 respectively), and COPD alone was shown to be predictive of PPC (p=0.030). Interestingly, intervention group LOS was significantly lower (5 vs 6 days) (p=0.047). High risk subgroups demonstrated no significant difference in any outcome, although a larger difference in frequency of PPC (14% vs. 23%) in favour of the intervention was observed, and 95% CIs indicated possible beneficial effect (-7.4 to 2.6). The difference in frequency of PPC in for patients with COPD and for current smokers/ ex-smokers of <6 weeks was even more apparent (36% vs 17% and 32% vs 17% respectively) and 95% CIs of the differences also indicated difference in favour of intervention (-6.8 to 4.2 and -11.4 to 3.9 respectively).

Conclusions: Incentive spirometry did not improve lung function, however, with a significant reduction in LOS benefit cannot be ruled out. The outcomes of high risk patients indicate that there may be a clinically and economically significant impact of treatment in this group, and investigations regarding physiotherapy need to be developed further in these patients.

053 Exploration of Patient Physical Activity Level Following Thoracotomy and Lung Resection

Authors: Paula Agostini; H. Cieslik; B. Naidu

Heart of England NHS Foundation Trust, United Kingdom

Background: No studies have yet explored the immediate impact of thoracic surgery on physical activity, yet reduced activity is a routine observation. We aimed to measure activity, observe outcomes, and identify factors predictive of lower activity.

Methods: A prospective observational study was conducted in a regional centre as part of a larger RCT. Physical activity of patients undergoing thoracotomy and lung resection was monitored with SenseWear Pro 3 armbands during postoperative day (POD) 2 and 3. Early mobilisation was encouraged and progressed daily.

Results: 99 patients were observed, 46 male (46%) with a mean (SD) age of 67 (±10) years and percentage predicted FEV1 75% (±19). Patients took a median (interquartile range) of 472 (908) steps, with >99% of time spent in sedentary activity (<3 METs). Patients (n=50) with lower activity (<500 steps) demonstrated a median of only 220 (282) steps compared to 1128 (960) in more active (> 500 steps) patients (n=49) ($p<0.001$), less time spent in moderate activity >3 METS ($p=0.003$) and more perceived pain ($p=0.013$ and 0.004 on POD 2 and 3 respectively). Frequency of postoperative pulmonary complication (PPC) was significantly ($p=0.034$) higher in patients with lower activity (20% vs. 4%) and they also demonstrated significantly ($p=0.013$) longer median LOS (6 days vs. 5 days). Age, predicted FEV1 and poor preoperative activity were independently predictive of reduced activity, and COPD predictive of PPC ($p<0.05$).

Conclusions: Physical activity following thoracotomy and lung resection is very limited despite regular physiotherapy, and associated with longer LOS. It is not known whether reduced activity caused PPC, or vice versa, and further studies are needed to confirm this. The effect of escalating postoperative physiotherapy and offering preoperative physiotherapy/rehabilitation to modify risk factors where possible requires further evaluation.

054 Structured Light Plethy Smography: Assessment of its Role as a Non-contact Tool to Measure Spirometry and Regional Chest Wall Movement

Authors: I.K. Levai[1] S. Baker[2] W. de Boer[2] W. Hills[2] R. Iles[3] A.S. Coonar[1]

1 Papworth Hospital NHS Foundation Trust, Cambridge University Health Partners, United Kingdom; 2 PneumaCare Ltd., United Kingdom; 3 Addenbrooke's Hospital, Cambridge University Health Partners, United Kingdom

Objectives: Structured Light Plethysmography (SLP) is a new non-contact method of assessing spirometry and chest wall motion using a projected 'structured light' grid. Cameras record changes in the light grid and this gives an estimate of chest wall volume changes over time. It is being developed for use in subjects who cannot undergo conventional spirometry. We are interested in assessing its role in thoracic surgery patients and its potential in studying regional chest wall movement. We present a video demonstration.

Methods: A subject sitting comfortably first undergoing tidal breathing then performs a forced expiration. While being observed by two cameras a structured grid pattern of light is projected onto the chest and abdomen with a projector.

Results: Using specific algorithms the information is used to reconstruct a surface approximation of the chest and abdominal wall. The data can be expressed in the form of spirometric traces and also can be presented as a 3D visualisation of chest wall and abdominal movement. Potentially regional differences could be studied.

Conclusions: To translate this technology to the clinical environment we are assessing its role initially in the form of a feasibility study, and then in specific studies. We would support a video demonstration with a presentation of our early experience.

055 Supraclavicular Approach for Resection of First Rib. Report of Two Cases

Authors: E. Addae-Boateng; I. Hernandez; L. Socci; A.E. Martin-Ucar

Nottingham university Hospitals NHS Trust, United Kingdom

Objective: We present the cases of two patients diagnosed with Thoracic Outlet Syndrome (TOS), with a left cervical rib as a CT finding. Both complained of a very invalidating pain in the neck, left shoulder and arm. The supraclavicular approach was chosen for both cases to remove the cervical rib.

Method: A left supraclavicular incision is made, the sternomastoid muscle is identified and divided. After removing the fat pad and preserving the phrenic nerve medially, the scalenus anterior muscle is divided. The subclavian artery and the braquial plexus are identifed and controlled, avoiding any damage to them while identifying and resecting the cervical rib. Resecting the bone borders is important to avoid recurrence.

Results: While in the first case the patient is discharged after 24 hours, in the second case we encountered upper limb weakeness that required reintervention to drain a collection. The patient had accidentally pulled her drain out in the Recovery Room.

Conclusions: When conservative treatments cannot improve the symptoms, surgery is the next option. The supraclavicular approach is a safe way in the resection of cervical ribs, permiting identification and control of the surrounding neurovascular structures, with good results. Nevertheless, despite a careful management, the procedure is not exent of complications.

056 Resection of Distal Tracheal Carcinoma in a Patient With Right Sided-aorta Via Left Thoracotomy

Authors: L. Socci; M. Kumaran; M. Malik; A.E. Martin-Ucar

Nottingham University Hospitals NHS Trust, United Kingdom

Objective: Tracheal primary carcinoma is a rare malignancy and to find it in a right sided aorta patient we believe has not described before. We report a case of a primary tracheal squamous cell carcinoma in a 64 years old patient with a right sided aortic arch (RAA): the patient underwent to a tracheal resection by left thoracotomy. He was diagnosed during an admission to Intensive Care Unit with respiratory failure requiring mechanical ventilation In our case the left subclavian artery arises from the left anterior aspect of the upper descending aorta and the ductus arteriosus was left-sided, running between the left pulmonary artery, below, and the left subclavian artery near its aortic origin, above. No others intracardiac anomalies were associated.

Method: Surgery was approached through a left posterolateral thoracotomy. Following identification and preservation of phrenic and vagus nerve (with the recurrent laryngeal nerve branch), subclavian and carotid artery, we proceeded to dissection of the ductus arteriosus exposing the trachea. The tumor was identified intraoperatively by flexible bronchoscopy and using a transillumination control a circumferential tracheal resection of 3 cm was performed. After the tumor segment was removed a cross-field ventilation was started in the distal trachea. The end-to-end anastomosis was performed with interrupted sutures, and reinforced with an intercostal muscle flap. The patient was extubated in Theatre and transferred to the Thoracic Ward. He was discharged on the 10th postoperative day. The Histopathology revealed clear excision margins and at 3 months follow-up the patient remains.

Conclusions: Tracheal primary carcinoma is a rare malignancy and we present a unique case of primary tracheal carcinoma in right sided aorta patient treated successfully.

057 Single-Incision Video-Assisted Thoracoscopic Left Upper Lobectomy: Technical Details

Authors: Diego Gonzalez-Rivas; R. Fernandez Prado; M. De la Torre Bravos

Minimally Invasive Thoracic Surgery Unit (UCTMI) and Coruña Hospital (CHUAC), Spain

Objective: Video-assisted thoracoscopic (VATS) left upper lobectomies are probably the most difficult major pulmonary resections. We report a movie showing the technical details of left upper lobectomies performed by single incision and no rib spreading.

Material and Methods: The incision, about 4-5 cm long, is performed in the 5th intercostal space. We do not use rib spreader. This incision is the same size as the utility incision we use for double or triple port VATS technique. Optimal exposure of the lung is key in order to facilitate the dissection of the structures and to avoid instrument malposition.

Results: Sectioning first the arterial trunk helps the access with the aid of staplers to the upper vein, which is the most uncomfortable structure to reach with staplers from the incision.).We try to use staplers for all of this anatomic hilar structures but when there is no angle for stapler insertion, we use clips for vascular control (hem-o-lok, teleflexR. In cases of incomplete fissure, we recommend to staple the fissure as the last step of the procedure, after dividing the hilar structures, from anterior to posterior (fissureless technique). When the lobectomy is completed, the lobe is removed in a protective bag and a systematic lymph node dissection is accomplished. A single-chest tube is placed in the posterior part of the incision.

Conclusions: Single-incision VATS left upper lobectomy is a feasible procedure when performed by surgeons experienced with double-port technique. We truly believe on the use of the single port technique for major pulmonary resections because we understand that the future goes in that direction, i.e., robotics and single-port.

058 Single-staged Laryngotracheal Reconstruction for Idiophatic Tracheal Stenosis

Authors: Abel Gomez-Caro[1] A. Morcillo[2] R. Wins[2] G. Galan[2] L. Molins[1] V. Tarrazona[2]

1 General Thoracic Surgery Department. Hospital Clinic, Spain; 2 General Thoracic Surgery Department. Hospital Clinico de Valencia, Spain

Objectives: This video shows a laryngotracheal idiopathic stenosis surgically treated by a laryngofissure plus anterior cricoid arch extirpation and end-to-end anastomosis.

Methods: A 62-year-old female with no remarkable medical history and no previous intubation or airway instrumentation complained of shortness of breath and stridor. Bronchoscopy showed a critical subglottic stenosis 0.5 cm beneath the vocal cords. Cervicothoracic CT scan showed a 3-cm length stenosis at 0.3-0.5 cm below the vocal cords, caused by scar mucosa; cricoid cartilage remained undamaged. Cervicotomy for tracheal dissection was carried out. Before the laryngofissure was performed, anterior cricoid arch was removed, preserving the cricoid plate. Subglottic mucosa was removed en bloc with the stenosis up to the vocal cords, going inside of the cricoid plate subpericondrically, and was eventually replaced by membranous flap tailored from the distal trachea to cover the cricoid plate. Running suture was carried out between this flap and the undamaged mucosa in the vocal cords. A transglottic T-tube was inserted for larynx remodelling, and tracheal and laryngofissure were then sutured by interrupted monofilament stitches, completing the single-staged laryngotracheal resection with thyroid-trachea anastomoses.

Results: Patient's postoperative course was uneventful. T-tube was removed 8 weeks later with normal trachea calibre and mobile vocal cords. One year later the patient breathes normally and her voice is only slightly dysphonic.

Conclusions: Single-staged laryngotracheal correction is successful in 95% of cases in our unit. Techniques selection in each case must consider the mobility and function of the individual's vocal cords, and their distance from the stenosis.

059 Video Assisted Thoracoscopic Surgery (VATS) Pleurectomy for Mesothelioma

Authors: Kirmani; M. Scarci; R. Rintoul; A. Coonar

Papworth Hospital, United Kingdom

The MesoVATS trial is a randomised controlled trial of VATS pleurectomy versus VATS talc poudrage for mesothelioma. This multi-centre study assesses the potential of minimally invasive cytoreductive 'non-radical' pleurectomy in reinflation of the lung, control of pleural effusion, survival at 1 year and other outcomes. The following video presentation shows a totally videoscopic partial visceral and parietal pleurectomy and demonstrates some of the techniques employed to deal with the thin, friable visceral cortex. The patient is a 60 year old female who initially presented with breathlessness. She was diagnosed with mesothelioma and enrolled in the MesoVATS study and randomised to VATS pleurectomy. We show how the lung is trapped by a visceral pleural cortex, inhibiting full expansion and restricting the lung from meeting the chest wall despite positive pressure ventilation. A small utility incision is made to allow instruments to be passed with no rib spreading. The cortex is dissected with conventional instruments using a combination of sharp and blunt dissection techniques. With the lung now inflating and some of the cortex removed or broken down, a parietal pleurectomy is performed to debulk tumour and produce a raw surface for pleurodesis. The patient went on to have an excellent result at discharge. This video shows the procedure as a 2 port VAT with an ~ 4 cm utility incision. We now almost always do this as a 2 or 3 port VAT.

060 Raphe Resection and Sub-commissural Annuloplasty in a Regurgitant Restricted Type I Bicuspid Aortic Valve

Authors: Hunaid Vohra; L. DeKerchove; D. Glineur; P. Norholmme; G. ElKhoury

Saint Luc University Hospital, Belgium

We show a film of repair of a regurgitant restricted type I bicuspid aortic valve. Resection of the raphe is performed with direct approximation and sub-commissural annuloplasty is performed on both commissures.

061 Keeping the Patent Internal Mammary Artery out of Harms Way at Future Reoperation

Authors: M. Abdelaziz; J. Bedi; J. Parmar

University Hospitals Coventry and Warwickshire NHS Trust, United Kingdom

Objective: With increase in long term survival after coronary artery bypass surgery and Left Internal Mammary Artery (LIMA) patency reaching up to 93% at 10 years, resternotomy for repeat cardiac surgery in the presence of a patent LIMA is not unusual. Avoiding damaging a patent LIMA is a challenge to the surgical team as the final position of the patent LIMA is variable. It often lies behind the sternum when displaced medially, due to lung re-expansion at the end of primary operation.

Method: Median sternotomy incision is performed as routine at the primary operation; the mediastinal fat lateral to the left lobe of the thymus is cleared up to the pleuro-pericardial reflection laterally. Extrapleural harvest of the LIMA is performed to the level of the left subclavian artery. The LIMA is divided distally after heparinisation and tested for patency. A transpleural tunnel is created through the parietal pleura by creating two openings; proximally at the apex of the pleura near the origin of the LIMA and a second opening at the pleuro-pericardial reflection. The LIMA is routed through the pleural cavity from the apical pleural opening to the pleuro-pericardial opening using a Semb clamp. A vertical incision in the pericardium will bring the LIMA into the mediastinum and is usually optimally placed with no inappropriate angulations. The end results of this manoeuvre is a LIMA graft lying within the pleural cavity medial to the upper lobe of the left lung and protected by a layer of pleura. Risk of damage to the LIMA at resternotomy and mediastinal dissection is therefore minimal.

At re-operation the left sided retrosternal tissue can be dissected without fear of injuring the LIMA. The patent LIMA can easily be accessed by incising the pleura

062 Off Pump Excision of Coronary Muscle Bridge Through a Mini-Thoracotomy - A New Approach

Authors: P. Youssefi; V. Chandrasekaran

St. George's Hospital, London, United Kingdom

Myocardial bridging is a congenital anomaly of the coronary arteries with compression of an epicardial vessel by overlying myocardium. The vessel most often affected is the Left Anterior Descending Artery (LAD). This lesion can be associated with angina pectoris, myocardial infarction, and cardiac arrhythmias. Management options include pharmacological therapy, percutaneous transluminal coronary angioplasty (PTCA), stent placement, coronary artery bypass grafting, and muscle bridge excision (myotomy). We present what we believe to be the first report of minimally invasive mini-thoracotomy with off-pump muscle bridge excision in the management of this lesion. A left anterior submammary mini-thoracotomy is performed through the 4th intercostal space measuring around 8cm. The pericardium is opened longitudinally along the LAD. Pericardial stay sutures were used for exposure, and the pressure stabiliser was used on the beating heart in order to isolate the LAD region and bring the heart further inferiorly. Starting distally, the LAD was unroofed millimetre by millimetre by dividing the overlying fat and myocardium with Potts scissors and low level diathermy. Care was taken to protect the LAD and its branches. Fat or eyelid retractors were used where possible. Gradual progress was made to reach the proximal most portion of the LAD which corresponds to the pulmonary valve. The muscle bridge was often found to be more fibrosed around the proximal portion of the LAD. After haemostasis, the pericardium was loosely closed in front. A pericardial redivac drain and a left pleural drain were inserted and the thoracotomy closed as routine. Intercostal nerve block was done with Bupivacaine and parietal pleural catheter was placed for infusion of Bupivacaine. 2 patients have undergone this procedure successfully with no recurrence of symptoms at the follow-up clinic. One of these patients has had a follow-up angiogram showing no evidence of systolic or diastolic compression.

063 Importance of Early Recognition of Vascular Anastomotic Complications in Lung Transplantation

Authors: A.K. Bose; H. Muse; K. Morley; L. Kenny; J.H. Dark; S.C. Clark

Freeman Hospital, United Kingdom

Objectives: Lung transplant recipients were reviewed to compare our early and current experience of vascular complications and their management. Since 1995 we pursued a policy of early identification and intervention.

Methods: A retrospective review of all lung transplant patients in a single centre.

Results: In 620 lung transplants we identified a total of 13 patients with pulmonary artery or venous obstruction (2.1%). 9 females, 4 males, age 25-55 years. Complications were identified 7 single, 5 bilateral transplants and 1 bilateral lobar transplant. Obstruction was identified in: 5 Right pulmonary artery, 5 Left pulmonary artery, 1 Left pulmonary vein, 1 with both right and left pulmonary vein and 1 combined Left pulmonary artery and vein. Prior to 1995 all 5 cases were identified post-operatively with an isotope perfusion scan in 2 cases, Ventilation Perfusion scan in 1 case and TOE in 1 case. The mean time for identification was 9.4 days (range 4 - 14 days). Interventions were revision of PA stenosis in 3 (warm ischemia in 1 case and cardiopulmonary bypass with cold flush in 2 cases) and angioplasty and stent insertion in 1 PV anastomosis. 2 patients died before any intervention. All patients died between 5-630 days (mean - 143 days) post-op. After 1995 complications were identified per-operatively in 4 cases and corrected immediately. 4 cases were identified later (<1 to 17 days) post-operatively by CT pulmonary angiogram. 1 patient with minor pulmonary artery narrowing (day 17) was managed conservatively. 3 were treated surgically within 24 hours of diagnosis (cardiopulmonary bypass with cold flush). 3 patients died within 30 days. 4 long term survivors with 3 patients remain alive (10, 58 and 110 months; mean - 59 months) the other surviving until the 15th year.

Conclusions: Pulmonary vascular complications after lung transplantation carry a high mortality. Early identification and intervention may improve outcome. TOE is now used routinely to facilitate this.

064 The Impact of Routine use of Intraoperative Transoesophageal Echocardiography in Adult Cardiac Surgery - A Prospective Study

Authors: K.H.K. Morcos[1] P. Saravanan[2]

1 Golden Jubilee National Hospital, United Kingdom; 2 Lancashire Cardiac Centre, Victoria hospital, Blackpool, United Kingdom

Objectives: The transoesophogeal echocardiography (TOE) is increasingly used to aid cardiac surgery. TOE is routinely used during cardiac surgery only in few units in UK. The aim of this study is to investigate the impact of routine use of TOE on intraoperative surgical decision making in a single cardiac unit.

Methods: We evaluated the impact of routine use of TOE in our cardiac unit over a period of 12 months from January 2009. Study was approved by our research department as service evaluation project. Data on the usefulness of TOE was collected prospectively for all the patients who underwent cardiac surgery during the study period. The impact of TOE was grouped into three categories namely, alteration to surgical procedure, aid to medical management and aid to surgical procedure. Alteration of procedure included new or abandoned or revised procedures while medical management included guidance to inotrope or fluid therapy and aid to surgery included placement of various surgical cannulae and devices and deairing.

Results: The data was obtained on 558 patients during the study period. Preoperative echocardiography was available in 74.1% of patients (n = 413). Routine use of intraoperative TOE had an impact on 75.1 % (n = 415) of cardiac surgical patients. Surgical decisions were influenced either by adding, removing or redoing a scheduled procedure in 10.2 % (n = 57) of patients of which 1.7 % (n = 6) in patients undergoing CABG alone (n = 351), 33.3% (n = 25) in those scheduled for CABG and valve (n = 75), 14.4 % (n = 14) in isolated valve procedures (n = 97), and 34.3% (n = 12) in all the other procedures (n = 35).

Conclusions: We recommend the routine use of intraoperative TOE as it altered the surgical decision in a significant number of patients, and was found useful in a large number of patients. This is in line with the practice guidelines published by the Society of Cardiovascular Anesthesiologists in May 2010.

065 Is 3D Echocardiography Better Than 2D Echocardiography in Intra-operative Assessment of Adults Undergoing Aortic Valve Replacement?

Authors: R. Basu[1] G. Muthuswamy[2] J.C.Y. Lu[3]

1 Department of Cardiac Anaesthesia, Trent Cardiac Centre, City campus, Nottingham University Hospital, United Kingdom; 2 Department of Cardiac Anaesthesia, Trent Cardiac Centre, City Campus, Nottingham University Hospital, United Kingdom; 3 Department of Cardiac Surgery, Trent Cardiac Centre, City campus, Nottingham University Hospitals NH, United Kingdom

Objective: To compare the performance of 3D with 2D echocardiography in relation to intra-operative assessment of aortic valve replacement (AVR) in adult cardiac surgery.

Methods: 22 patients for AVR surgery were identified between June and November 2011. Retrospective intra-operative TOE images were analysed to identify the following parameters from 3D and 2D echocardiography and results analysed with Wilcoxon method.

Results:

Parameters measured	*2D echo (n=22)*	*3D echo (n=22)*	*P value*
Aortic Valve area (planimetry) cm^2 +/- SD	0.85 +/- 0.28	0.81+/- 0.22	0.58
Planimetry unobtainable	7 cases	9 cases	Not applicable
Annular diameter mm +/- SD	22 +/- 2	22 +/- 3	0.89
Aortic regurgitation: Absent dataset	0 cases	4 cases	Not applicable
LV function: Absent dataset	0 cases	4 cases	Not applicable
Number of loops required for complete echo analysis +/- SD	10 +/- 1	3 +/- 1	<0.0001
Aortic valve peak gradient mm Hg +/- SD	65 +/- 19	Not available in 3D modality	Not applicable
Aortic valve mean gradient mm Hg +/- SD	33+/- 10	Not available in 3D modality	Not applicable

In one case the precise location of a paraprosthetic leak was only detected with 3D and in another the cause of post AVR mitral regurgitation was only clear with 3D echo. Conclusions: 2D echo offered superior results in comparison to 3D echo when used for intraoperative assessment of aortic stenosis. However, 3D echo required far fewer image acquisitions. Also, 3D echo accurately detected significant post AVR pathology in some cases. The additional value of 3D echo is in using it in conjunction with 2D echo in intraoperative assessment for AVR.

066 Impact of the Full Implementation of the European Working Time Directive on Surgical Training in Adult Cardiac Surgery

Authors: Balakrishnan Mahesh; M.A.M. Codispoti

Papworth Hospital, United Kingdom

Objectives: Surgical specialties rely on apprenticeship to transfer technical skills. Final reduction in working hours to 48 per week, in accordance with the European Working Time Directive (EWTD), has led to expansion in number of trainees. We examined impact of these changes on training in a high-volume [>1500 procedures/year] adult cardiac surgical centre.

Methods: In keeping with implementation of final phase of EWTD, proportion of cases used for surgical training were compared for two non-overlapping consecutive time periods: phase-1 (January 2006-December 2008) comprising 4504 cases, and phase-2 (January 2009- August 2010) comprising 2184 cases. Phase-2 constituted final reduction in working hours to 48/week [final-EWTD] and was analysed as a predictor of training, along with other predictors - trainee grade, logistic EuroSCORE, surgery type, weekend or late cases, consultant. Logistic regression analysis was performed to independently evaluate the impact of phase-2 on operative surgical training.

Results: Proportion of training cases rose from 34.6% (1558/4504) in phase-1 to 43.6% (953/2184) in phase-2 ($p<0.0001$), despite higher logistic EuroSCOREs [4.29(±6.8) in phase-1 vs 4.95(±7.2) in phase-^{2} $p<0.0001$] and higher proportion of out-of-hours' cases [153(3.4%) in phase-1 vs 116(5.3%) in phase-2, $p<0.0001$]. Proportion of cases performed by senior trainees (last two years of training) increased from 17.8% (803/4504) in phase-1 to 34.9% (763/2184) in phase-2 ($p<0.0001$). Multivariate analysis identified independent positive predictors of training cases to be consultant in-charge, final-EWTD, and senior trainees, and independent negative predictors of training cases to be logistic EuroSCORE, out-of-hours' cases, and cases other than coronary bypass grafts.

Conclusions: Implementation of the final phase of EWTD has not decreased training in a high-volume adult cardiac surgical centre, despite higher logistic EuroSCOREs and higher proportion of out-of-hours' cases.

067 Global Trends in Cardiothoracic Surgical Academic Output: Is the UK Keeping Up?

Authors: M. Ibrahim; C. McGregor

Heart Hospital, United Kingdom

Objectives: To maintain the vitality and future promise of cardiothoracic surgery, the specialty must continue its tradition of research and innovation. Peer reviewed publication output is one metric of this activity.

Methods: To address the trends in cardiothoracic surgical research output, we analysed the geographical source (UK, non-UK EUROPE, North America, Rest of the world) of peer reviewed publications in the five leading cardiothoracic surgical journals (defined as impact factor>1) from 1990-2010.

Results: 44784 publications were identified. The total number of publications/year increased from 1106 papers in 1990 to 2913 papers in 2010. By 2010, European output was 4 times that in 1990, while UK publication output had achieved half the rate of increase (95% confidence intervals, UK: 0.02352 to 0.06399; EU: 0.1293 to 0.1662). This resulted in a reduction in the UK share of European publications from 35% (1990-1995) to 18% (2005-2010) ($p<0.01$). The UK share of global cardiothoracic surgical academic output also declined with time (correlation r=-0.5601). North American output has similarly declined but remains the single largest producer of peer reviewed cardiothoracic publications (38%).

Conclusions: We conclude that there is a need to invest in research and innovation in the UK Cardiothoracic surgical community to meet the challenges of the future.

068 The Impact of Training on Clinical Outcomes and Resource Utilization in a High-volume Cardiothoracic Surgical Centre

Authors: S. Messer[1] U. Benedetto[2] M. Codispoti[1]

1 Papworth Hospital, United Kingdom; 2 Sant'Andrea Hospital, Italy

Objective: Drastic reductions in trainees' working hours have resulted in significant changes in the methods of delivering surgical training. There is little current data on the impact of these changes on clinical outcomes and resource utilization. In this study we investigated the effects of training on use of hospital resources, 30-day and medium-term survival.

Methods: We conducted a retrospective analysis of prospectively collected data on first-time isolated CABG and AVR procedures carried out at our institution between April 2009 and July 2011. Multivariate linear regression analysis was utilised to identify factors influencing hospital costs, 30-day mortality and medium-term survival.

Results: 589 patients (133 AVRs, 456 CABGs) were included in this study. 303 procedures were performed by trainees, whilst 286 operations were carried out by consultants. Operative times are summarised in table 1. After adjusting for risk class and type of surgery, there were significant differences in utilization of hospital resources, mostly due to increased duration of surgery ($p<0.001$), increased length of stay in ITU ($p=0.004$) and in the ward ($p<0.001$) for cases operated on by trainees. 30-day mortality was 0% for cases operated on by consultants versus 0.9% for trainees (p=NS). There were no significant differences in risk-adjusted late survival at a mean follow up of 20 months.

Conclusions: Procedures performed by trainees independently predict increased average costs for both first-time isolated CABG and AVR, mostly due to increased durations of surgery, ITU and hospital stay. There were no significant differences in hospital and medium-term survival for patients operated on by consultants or trainees.

	X-Clamp (mins)	*CPB (mins)*	*Theatre time (mins)*	
CABG	Consultant	41±1	70±1	174±2
	Trainee	49±1*	85±2*	217±3*
AVR	Consultant	50±2	68±3	148±3
	Trainee	65±2*	86±3*	188±4**:
p<0.0001	Trainee vs Consultant			

069 Walk-in Thoracic Surgery Clinics as Part of Multidisciplinary Rapid Access Lung Cancer Service

Authors: Prity Gupta; J. Sharman; A. Bajaj; J. Bennett; S. Rathinam

Glenfield Hospital, United Kingdom

Objectives: Leicester Thoracic Oncology Unit's ambition is to deliver a comprehensive service, concentrating on excellent, rapid and effective care in a patient centred manner. We present our experience of a multidisciplinary rapid access lung cancer service with the option of walk-in thoracic surgery consultation.

Methods: Our Streamlined rapid assessment lung (RAL) cancer clinic for all 2 week wait referrals run in parallel with a thoracic surgical clinic and integrated with radiology. Greater than 70% of all new referrals with suspected lung cancer have pre clinic staging CT scan and the images are reviewed at a same day pre-clinic meeting attended by a thoracic surgeon, respiratory physicians, radiologists and specialist nurses. Provisional investigations are pre booked. Potentially resectable patients are reviewed same day by the thoracic surgeon and a treatment date is agreed. CT guided lung biopsy and bronchoscopy booked for the following morning. The patients are discussed in the MDT with the results. The patients seen in thoracic surgical clinic from Nov 2009 to 2011 were analysed.

Results: 144 patients were seen in the Thoracic surgical clinic as walk-in patients from RAL. 4 requested second opinion from the oncologists prior to committing to surgery. 11 patients did not proceed to surgery due to fitness or patient choice. There were no oncology waiting time breeches in this period. The surgical consultation varied between the walk-ins (Anatomical Lung resections: 47%, sub-lobar resections: 27%, Mediastinal Mass Excision: 6%, Palliation: 8% and Staging 12%) and upto 80% patients were given a definitive treatment date at the time of consultation. The feedback from patients during follow-up has demonstrated their approval for the rapid streamlined pathway as it expedites their care and alleviates the stress of waiting.

Conclusions: In our experience the multidisciplinary rapid access lung cancer services works in an efficient manner and patients preferred it.

070 The Development of a Nurse Led Protocol for Removal of Thoracic Drains Post Surgery

Authors: D. Danitsch[1] A. Alzetani[1] S. Ghosh[2]

1 University Hospital of North Staffordshire, United Kingdom; 2 North Staffordshire Royal Infirmary, United Kingdom

Background: To determine whether a nurse led protocol for removal of thoracic drains are safe 2. Improve the patient experience 3. Improve consistency in practice 4. Release more medical

Methods: A protocol was developed based on the amount of drainage and the flow rate of the digital drain. To test the safety of the algorithm a pilot study of 17 patients was undertaken of patients who had undergone thoracic surgery by one surgeon over a 2 month period. The results explored the need for re-intervention, any assistance required by the medical team and whether any further investigations were needed including an CXR.

Results: A prospective pilot study was undertaken. Over a 2 month period (May-July 2010) 17 patients were recruited after thoracic surgery to take part in a nurse-led chest drain management scheme (group1). An age, gender and procedure matched group was used for comparison from the same period (group2). The average length of stay for group1 was 5.8±4.8 days and for group2 was 4.2±3.6 days. Changes were made to the protocol throughout its use and this included the number of investigations carried out. After the development of the protocol less CXR's were being requested. There were no drains re-inserted and no patient's re-admitted during the pilot phase.

Conclusions: A nurse led protocol is safe and practical when used by a senior nurse. Modifications may allow less senior nurses to be able to use the protocol ensuring an effective service in the modern thoracic UNIT.

071 The Development and Implementation of the Band 4 Physiotherapy Assistant Practitioner role at Papworth Hospital NHS Foundation Trust

Authors: Sophie Drake; A. Eden

Papworth Hospital NHS Foundation Trust, United Kingdom

Background: The Band 4 Assistant Practitioner role was introduced to the Physiotherapy department in August 2010 in accordance with plans to move to seven day working and to address the need for weekend rehabilitation. The Assistant Practitioner role at Papworth involves the treatment of routine, non-complex patients following cardiothoracic surgery and independently staffing the weekend rehabilitation service.

Objectives: To outline the development, implementation and evaluation of the new Band 4 Physiotherapy Assistant Practitioner role in post-operative cardiothoracic care from the prospective of an Assistant Practitioner.

Methods: The data for the evaluation of this role was collected via two methods.

The qualitative data was collected via written feedback from the Physiotherapy and Professional Support Services department, ward sisters and medical staff. This was collected 6 months post role implementation.

The quantative data was collected via evaluation of Key Performance Indicators, taken pre Assistant Practitioner role implementation in 2010 and post implementation in 2011. These indicators where calculated into percentages to provide an overall result.

Results: The qualitative data collected from the MDT was overwhelmingly positive and highlighted further areas for development.

The quantitative data showed that there was no change in the quality of the Physiotherapy service despite a change in skill mix with the introduction of the Assistant Practitioner role. As well as this, a dramatic improvement was seen in the provision of rehabilitation during the weekend.

Conclusions: The introduction of the Assistant Practitioner role has been a welcome addition to the Physiotherapy department and has had a positive impact on the provision of rehabilitation for patients at weekends, in comparison to previous traditional physiotherapy weekend services, which only provide basic emergency respiratory cover.

072 Human Factors and Thoracic Anaesthesia: A National, Multi-disciplinary Simulation and Skills-based Course to Teach Non-Technical Skills

Authors: N.A. Joshi[1] R. Sreenivasan[2] K. O' Connor[1] A. Nunn[3] A. Hemming[4] K. Wark[4] M.K. Molyneux[1] N. Rasburn[1]

1 University Hospitals Bristol, United Kingdom; 2 Barts and the London Medica Simulation Centre, United Kingdom; 3 Barts and The London Medical Simulation Centre, United Kingdom; 4 Barts and the London NHS Trust, United Kingdom

Objectives: Thoracic anaesthesia and surgery expose clinicians to critical events. In addition to technical ability, clinicians must demonstrate proficiency in non-technical skills to avoid adverse outcomes. A study of anaesthetic related errors concluded that 80% of incidents were preventable, of which 75% were attributed to human error [1]. Anaesthesia Crisis Resource Management (ACRM) training enables individuals to practise their non-technical skills. This course has been formulated to teach ACRM in the context of thoracics, integrated with technical skills in a simulated, multi-disciplinary operating theatre environment.

Methods: One Lung is a collaborative, evidence-based, peer-reviewed course in thoracic anaesthesia taught at nine centres nationwide. It comprises of skills stations and scenarios, each devised to highlight specific learning points. Technical skills are mapped to the Royal College of Anaesthetists standards for a 'CCT in Anaesthetics' [2] and non-technical skills are mapped to the ACRM key points [3]. Candidates are anaesthetic trainees, consultants and ODPs and faculty are multi-disciplinary, (anaesthetists, thoracic surgeons and theatre nurses). This reinforces the interdisciplinary non-technical skills required to manage critical events successfully

Conclusions: This is the first multi-disciplinary course teaching ACRM in thoracics. Future directions include pre- and post- course assessment of candidates' competence in ACRM using the 'Anaesthetists' Non Technical Skills' scoring system [4] and involvement of surgical trainees as candidates, owing to demand.

073 Key Performance Indicators: A Physiotherapy Departments Performance for Patients Following Cardiothoracic Surgery and Cardiology In-patients

Authors: Allaina Eden

Papworth Hospital NHS Foundation Trust, United Kingdom

Objective: As part of the Trust's objectives for service review and improvement, the Physiotherapy Department set treatment standards for patients admitted for cardiothoracic surgery or cardiology care.

Method: There are no national physiotherapy guidelines for standard of care for this patient population, therefore the standards were developed using the knowledge and experience of senior physiotherapists within the department. The standards were established in December 2009. Data to audit against these standards was collected once in 2010, and quarterly throughout 2011.

The standards originally set are: • 70% of patients post cardiac surgery will be discharged from physiotherapy day 4 post operation. • 100% of patients requiring FiO2 ≥ 0.4 high flow oxygen receive at least twice/day physiotherapy treatment on Day 1 operation. • 100% of patients requiring FiO2 ≥ 0.4 high flow oxygen should be sat out of bed Day 1 post operation. • 100% of post surgery patients receive a physiotherapy assessment in the morning on Day 1 post operation. • 100% non-surgical patient referrals are assessed and treated within 24 hours of referral. • 100% of all patients requiring rehabilitation treatment (including gym sessions) are not affected by staffing levels.

Results: Throughout the process the standards and data collection have been amended, with change in targets and service provision. The introduction of a weekend rehabilitation service has significantly increased the frequency and standard of treatment provided to long term patients. Data analysis has changed to focus on length of physiotherapy treatment, to reflect the Trust's importance of length of stay and activity throughput.

Conclusions: By analysing Key Performance Indicators quarterly, the Physiotherapy Department is able to provide robust evidence and justification of service, whilst identifying areas of successful service and those in need of review and improvement.

074 The Impact of Implementing a Late Shift on a Physiotherapy Department's Respiratory on Call Service

Authors: Allaina Eden

Papworth Hospital NHS Foundation Trust, United Kingdom

Objective: To assess the effect of implementing a late shift on the emergency respiratory physiotherapy on call service.

Method: Following service and cost improvement requirements the Physiotherapy Department implemented a late shift. Starting at 13:00, the physiotherapist works in their normal clinical area until 17:30, then undertakes office based non-clinical work on site until 21:00. This member of staff is available for emergency respiratory on call treatments from 16:30. After 21:00, the on call responsibility transfers to a different physiotherapist who provides a traditional off site on call service. The overnight on call physiotherapist is rostered for the late shift the following day. The impact of this change has been audited since the implementation in September 2010. Non-clinical activity is monitored to ensure time is spent on service improvement and continuing professional development. Clinical activity is audited to ensure that the on call criteria is adhered to, and to monitor trends in time of call out, length of treatment, ward location and person requesting the on call service.

Results: The advantages of this working pattern are that mandatory compensatory rest time is incorporated into shift patterns and staffing levels, a quicker response time to patients requiring treatment, recognised cost saving for the department, improvement in work/life balance, protected non-clinical time, and the overnight on call commitment starting at 21:00 allows flexibility for non work commitments.

Disadvantages include some reduction in work/ life balance as working late into the evening does not suit all, some tendency to prearrange non-essential respiratory treatment, and ineffective non-clinical work due to evening time.

Conclusions: The implementation of the late shift has positive and negative aspects. However, the cost reduction and improvements have led to the service becoming an accepted practice for the delivery of on call treatment.

075 Outcome of Extracorporeal Membrane Oxygenation as Short Term Mechanical Support Following Heart Transplantation: A Single Centre Experience

Authors: Sharath Hosmane; R. Venkateswaran; J. Salaie; S. Williams; N. Yonan

University Hospital of South Manchester, United Kingdom

Objective: Extracorporeal membrane oxygenation (ECMO) has been reported to be an excellent tool to salvage patients with cardio-respiratory failure post heart transplant (HTX). We report our experience and results of ECMO support after HTX.

Methods: Between May-2006 and Apr-2011, 72 adult HTX were performed in 71 patients. Twelve episodes of ECMO were used in 10 patients during this period (Group-1). Veno-arterial ECMO (VA-ECMO) was used in 10 and veno-venous ECMO (VV-ECMO) in the remaining. We compared donor, recipient variables and post-operative outcome between the ECMO and non-ECMO groups (Group-2).

Results: VA-ECMO was used for primary left ventricular dysfunction on 7 episodes and for right ventricular failure in 3 episodes (tunnelled central ECMO with right atrial cannula returning blood to ascending aorta). VV-ECMO was used in 2 patients for respiratory failure and ARDS (Size-31 Fr Avalon EliteTM cannula). The mean duration of ECMO was 5.4±2.4 days. Eight patients required short term hemofiltration. Donor and recipient demographic variables between the groups were similar (Table). The mean ischaemic time for the whole cohort was 227.3±44.5 mins and was not different between the groups (p=0.74). There was a significant female to male transplants in the ECMO groups (p=0.032). Nine out of 10 (90%) of VA-ECMO were successfully weaned with satisfactory recovery of graft function. Thirty day survival was 82% and 96% in Groups 1 and 2 respectively (p=0.11). The one year survival for the whole cohort is 95.8% and is comparable between the groups (p=0.11).

Conclusions: ECMO support is an excellent tool to salvage patients who develop primary graft dysfunction post HTX. The immediate outcome are comparable and this will enable use of marginal donor hearts that otherwise would have been turned down for transplantation.

	Group 1 (mean +/- sd)	*Group 2 (mean +/- sd)*	*p value*
Recipient Age	48.3 +/- 11.4	45.3 +/- 13	0.44
Recipient BMI	26.9 +/- 3.6	26.1 +/- 3.7	0.44
Mean Pulmonary Artery Pressure (mm of Hg)	27.9 +/- 9.0	28.0 +/- 10.2	0.97
Donor Age	36.6 +/- 11.9	36.2 +/- 12.1	0.92
Height Mismatch (%)	5.2 +/- 3	4.5 +/- 3	0.49

076 Elective Transfer from Cardiopulmonary Bypass to Centrifugal Pump Support in Very High Risk Cardiac Surgery

Authors: Stephen Westaby[1] R. De Silva[2] C. Grebenik[2]

1 Oxford University Hospital NHS Trust, United Kingdom; 2 John Radcliffe Hospital, United Kingdom

Objectives: Operating on patients with advanced heart failure is high risk but this group has much to gain if they survive. Some patients deteriorate into cardiogenic shock postoperatively. In established low cardiac output state the intra-aortic balloon pump (IABP) proves ineffective and recovery may take days or weeks. In borderline survival situations we elected to wean directly from cardiopulmonary bypass (CPB) to a short term centrifugal blood pump..

Methods: I high risk patients, Levitronix CentriMag implantation is undertaken during 30 minutes of myocardial reperfusion before discontinuing CPB. Conduits for the inflow and outflow cannulas are used to improve the safety of decannulation. After protamine the sternum is closed to allow extubation during support

Results: In 7 high risk patients, 6 had IABP during anaesthetic induction. One had aorto-iliac occlusion and 2 had extensive infarction with septal rupture. Duration of support ranged from 2-8 days. Six were discharged from hospital. One died from hepato-renal failure.

Conclusions: As risk profile increases we need for reliable short term support to contain mortality. The pump unloads the stunned ventricle, boosts coronary and systemic blood flow thereby promoting myocardial recovery with high success rate. These devices must be made available in all cardiac surgical centres

077 The Need for Thoracic Surgery in Adult Patients Receiving Extra Corporeal Membrane Oxygenation: A 16 Year Experience

Authors: Vijay Joshi; A. Nakas; D.A. Waller; C. Harvey; G. Peek; R. Firmin

Glenfield Hospital, United Kingdom

Objectives: Patients on extra-corporeal membrane oxygenation (ECMO) are at risk from thoracic complications such as bleeding or pneumothorax. We reviewed a 16 year ECMO experience to quantify and characterize the need for secondary thoracic surgical intervention.

Methods: We reviewed a prospective database of 550 adults put on ECMO between 1995 and 2011. The indication and nature of thoracic surgical intervention was analysed.

Results: Eexpressed as median (range) A total of 40 thoracotomies were performed in 18 patients [61% male, age 30 (14-56) years]. Their indications for ECMO included pneumonia [bacterial (6/33%), viral (3/17%), H1N1 (3/17%), autoimmune (2/11%)] trauma (2/11%), and other (2/11%). ECMO was continued in total for 13 (1-257) days and first thoracotomy was required after 10 (1-183) days. The indications for thoracotomy were: 10/18 (56%) excessive bleeding post chest drain insertion; uncontrolled air leak 9/18 (50%) and pleural effusion 4/18 (22%). The primary operations were 12/18 (63%) evacuation of haemothorax, 3/18 (16%) lung repair, 2/18 (11%) diagnostic lung biopsy and 2/18 (11%) other. Ten patients needed a further 22 thoracotomies; 2 (1-5) per patient. The commonest cause was persistent bleeding in 9 patients. Three patients needed anatomical lung resection at reoperation. The number of patient necessitating multiple blood transfusion, inotropes, and renal replacement therapy (RRT) increased following initial thoracotomy (6 to 72%, 50 to 67%, and 33 to 56%, respectively). The in-hospital mortality was 7/18 (39%) patients. Poor prognostic indicators included: RRT (10/18, $p<0.01$): intestinal bleeding or ischaemia (3/18, $p=0.04$).

Conclusions: The need for thoracotomy whilst on ECMO is 3.3% in this large UK series. Whilst this is low it is not insignificant and should be taken into account in resource planning for the proposed national expansion in ECMO centres. Either ECMO specialists should have thoracic training or thoracic surgeons should be on-site.

078 The Physical Presence of aThoracic Surgeon at a District General Hospital Lung Multi-Discplinary Meeting Significantly Increases the Resection Rate

Authors: M. Tahir[1] A. Nakos[2] A. Morris[2] B.V. Prathiba[2] R. Burcombe[3] J.E. Pilling[1]

1 Guys Hospital, United Kingdom; 2 William Harvey Hospital, United Kingdom; 3 Maidstone Hospital, United Kingdom

Objectives: National Cancer Peer Review measures dictate that all patient with non-small cell lung cancer (NSCLC) should be discussed in a multi-disciplinary meeting (MDM). There is a wide variation in resection rates and relationships between surgical centre and District General Hospital (DGH) across the UK. We studied the effect of the physical presence of a pure thoracic surgeon at a DGH MDM on the resection rate.

Methods: Retrospective analysis of 404 consecutive patients with NSCLC passing through a DGH MDM between April 2008 and March 2011. Patients were divided into two groups: Group A (13 months) - MDM without a surgeon present (surgical cases subsequently referred to a regional MDM) and Group B (23 months) - MDM with a pure thoracic surgeon present.

Results: The resection rate significantly increased in group B compared with Group A, both for cases with a clinical [15.8% (43 of 271) versus 2.25% (3 of 133) $p<0.001$] and pathological [17.1% (43 of 251) versus 2.5% (3 of 122) $p<0.001$] diagnosis of NSCLC. The 43 surgical patients [20 Male, median age 70 years (range 42 -86)] in period B underwent 2 pneumonectomies, 34 lobectomies (3 VATS, 2 bronchoplastic, 1 with chest wall resection), 2 anatomical segmentectomies (1 with chest wall resection) and 5 VATS wedge resections. Two patients underwent bilateral surgery for synchronous primaries; one for a new primary following previous lobectomy and one for new primary in the field of previous chemo-radiotherapy. 19 patients (44%) had operations without prior tissue diagnosis. Co-morbidities included: IHD 12%, peripheral or cerebro-vascular disease 12%, previous malignancy 18%. There was one in hospital death (2.3%) median post operative stay 6 days (range 0-44).

Conclusions: The presence of a pure thoracic surgeon at a DGH lung MDM significantly raises the resection rate. Despite resource implications, the optimum delivery of a thoracic surgical service involves a surgeon being physically present at the lung MDM.

079 Effect of European Working Time Directive Legislation on the Quality of Thoracic Surgical Training and Outcomes Following Lobectomy for NSCLC

Authors: R. Warwick; M. Poullis; J. McShane; I. Whittle; M. Shaw; S. Woolley; R.D. Page; N. Mediratta; M.J. Shackcloth

Liverpool Heart and Chest Hospital, United Kingdom

Objectives: It had been suggested that the introduction of the European Working Time Directive (EWTD) legislation in 2004, which reduced doctors' hours to 56 per week, and the further reduction to 48 hours per week in the amended legislation in 2009 would negatively impact on thoracic surgical training and outcomes. We assessed our experience in a specialist thoracic surgical unit.

Methods: Between October 2001 and September 2011, 1828 lobectomies for NSCLC were performed. These procedures were initially divided into three groups: Pre-EWTD1 Aug2004 (n=517), EWTD1 from Aug2004 to July2009 (n=894) and finally EWTD2 from Aug2009 to September 2011 (n=417). The proportion of trainee-led procedures during the three time periods was assessed. We also assess any differences in key outcomes between the three time periods and between consultant- and trainee-led cases within these groups, using multi-variate analysis to adjust for variations in casemix.

Results: The proportion of trainee-led cases increased significantly ($p=0.004$) over the 10 years, from 37% (n=193) in the first period to around 45% in both the second and third periods (n= 414 and 188, respectively). However, the number of trainees performing lobectomies was reduced over the 10 years. There was no difference in outcomes between consultant- and trainee-led operations before or after risk-adjustment. Nor was there a difference in outcomes between the three time periods, with the exception of post-operative length of stay which reduced significantly from a median of 8 to 6 days ($p<0.0001$).

Conclusions: Lobectomies can be performed safely by trainees. The EWTD has resulted in an increase in the number of lobectomies being performed by trainees, but they are being performed by a small number of trainees. The EWTD will possibly lead to the production of fewer but more experienced trainees

080 The Incidence of N2 Disease in NSCLC Tumours That Meet the Size Criteria for Lung Resection by VATS

Authors: Johan Van der Merwe; A. Nicholson; S. Jordan; M. Dusmet; G. Ladas; E. Lim

Royal Brompton and Harefield NHS Trust, United Kingdom

Objectives: 5cm has been accepted as the maximum tumour diameter for VATS lung resection. Japanese series reported on the low incidence of N2 disease in this cohort. We sought to determine from our institution, the incidence of N2 disease in VATS operable NSCLC tumour sizes (T1a < 2cm, T1b 2-3cm, T2a 3-5cm).

Methods: Data was acquired from our institutional thoracic surgery and pathology databases. Pathology reports were scrutinised for the presence of N2 disease according to TNM 7 criteria.

Results: From 1999-2009, 933 patients underwent surgery for suspected lung cancer. The data of 530 patients with primary NSCLC smaller than 5cm who underwent thoracotomy, systematic nodal dissection (SND) and pulmonary resection was available. By TNM7 size criteria, there were 111 (20.9%), 164 (30.9%), 255 (48.1%) patients in T1a, T1b and T2a respectively. Their pathology reports were reviewed for nodal disease. 60 (11.3%) patients of the study population had pathologic N2 disease, 10 (9.0%), 23 (13.9%) and 27 (10.6%) in T1a, T1b and T2a respectively.

Conclusions: Our results suggest that an important proportion (11.3%) of patients who are eligible for VATS lobectomy on size criteria have N2 disease, emphasising the importance of systematic nodal dissection for staging in this cohort.

081 Outcome of Chest Wall Deformity Repair Using Ravitch Procedure Without Sternal Support Bar

Authors: R.S. George; K. Papagiannopoulos

St James's University Hospital, United Kingdom

Objective: Chest wall deformity imposes a serious cosmetic problem and depending on severity can be associated with respiratory and cardiovascular complications. Traditional Ravitch procedure is the standard surgical approach with the use of metal bars to eliminate postoperative flail chest and to reduce pain. However, sternal bars have been associated with multiple complications and often require a second anaesthetic for removal. The purpose of this study is to evaluate the post-operative outcome of metal free Ravitch repair against the use of any metal support.

Methods: Between October 2006 and August 2011, 58 patients underwent Ravitch procedure: 28 pectus excavatum and 30 pectus carinatum. 41 patients (Group 1) did not have a pectus bar; instead a gortex patch or marlex mesh fashioned into 'hammock' shape was used. The remaining 17 (Group 2) had a pectus bar implanted: 14 for pectus excavatum and 3 for pectus carinatum.

Results: Group1 patients were younger (20.7±6.4 years vs 25.5±10.5 years, p=NS) with more females (34.1% vs 23.5%, p=NS). Post-operative length of stay was similar between both groups (5.4±1.5 days vs 6.7±3.1 days, p=0.12). Six (14.6%) group 1 patients developed procedure related complications as compared to 10 (58.8%) from group 2 ($x2=11.7$, $p<0.001$). Pectus excavatum and pectus carinatum patients requiring metal bar had more complications as compared to those without metal bar (50% vs 7.1%, $p<0.01$ and 100% vs 18.5%, $p<0.01$, respectively). Two group 1 patients required a redo procedure versus six group 2 patients (4.9% vs 35.2%, $p<0.01$). 32 (78%) patients from group 1 have been satisfactorily discharged from the thoracic care with no follow up as compared to 6 (35.3%) patients from group 2 ($x2=13.1$, $p<0.001$) where 4 are awaiting bar removal.

Conclusions: Chest wall reconstruction without using the sternal support bar is associated with significantly lower rate of complications, higher rate of discharge, and reduced rate of redo procedures.

082 Is Pneumonectomy Really a Disease?

Authors: Michael Poullis; R. Page; M. Shackcloth; S. Woolley; T. Theologou; N. Mediratta

Liverpool Heart and Chest Hospital, United Kingdom

Objectives: Pneumonectomy is associated with a higher operative mortality rate and poorer 5 year survival after resection for non small cell lung cancer, compared to a lobectomy. A number of studies have identified this, and recommended sleeve resections as a way to avoid the risk of pneumonectomy. Our aim was to confirm or refute the concept that pneumonectomy may be a disease, and not a treatment.

Methods: We retrospectively analysed a prospectively validated thoracic surgery database. We benchmarked our 5 year survival against the 7th IALSC results. Kaplan-Meier survival curves for all resections stage 1, II, and IIIa were constructed for patients who had undergone lobectomy (N=1,484) or pneumonectomy (N=266). All wedge resections and non adenocarcinoma or non squamous carcinomas were excluded.

Results: Benchmarking failed to reveal any significant difference compared to the 7th IALSC results. Logistic regression demonstrates pneumonectomy as a significant independent indictor of operative death (p=0.049), however Cox regression analysis demonstrated pneumonectomy had no effect on survival (p=0.24). When broken down by stage pneumonectomy and lobectomy had identical survival rates, stage I (p=0.06), stage II (p=0.60), and stage IIIa (p=0.25).

Conclusions: Pneumonectomy is not an independent risk factor for adverse 5 year survival. Stage, and not lobectomy or pneumonectomy determines 5 year survival.

083 Surgery for Pulmonary Aspergillosis: A National Centre's Experience

Authors: S. Farid; S. Mohammed; M. Devbhandari; D.W. Denning; M.T. Jones; P. Krysiak; S.Y. Soon; R. Shah; K.S. Rammohan

Wythenshawe Hospital, United Kingdom

Objectives: Surgery for pulmonary aspergillosis is infrequent and challenging. We analyzed our medium and short term surgical outcomes from a tertiary referral University hospital which houses the National Aspergillosis Centre.

Methods: Retrospective study of patients who underwent surgery for pulmonary aspergillosis between September 1996 and September 2011.

Results: 30 patients underwent surgery with 23 having a preoperative tissue diagnosis while 7 were confirmed after resection. The male: female ratio was equal. The median age was 57 years (17-78). The commonest presenting symptoms were cough (66%, n=20) and haemoptysis (43%, n=13). Underlying lung diseases included tuberculosis (20%, n=6), asthma (26%, n=8), bronchiectasis (13%, n=4). 6 patients (20%) were immunosuppressed. The procedures included lobectomy 46% (n=14), pneumonectomy 13% (n=4), sublobar resection 20% (n=6), decortication 6% (n=2), segmentectomy 3% (n=1), bullectomy and pleurectomy 3% (n=1). Two (6%) patients underwent lung transplantation for associated cystic fibrosis and emphysema. There was no operative and 30 day mortality. 4 patients (13%) died during follow-up. The actuarial survival was 80% at 5 years. Median hospital stay was 9.5 days (3-37). Prolonged air leak (n=7, 23%), empyema (n=6, 20%), reopening for bleeding (n=1, 3%), ARDS(n=1, 3%), respiratory failure requiring tracheostomy (n=3,10%) and bronchopleural fistula (n=1, 3%) were the noted complications.

Conclusions: Surgery in a selected group of patients with pulmonary aspergillosis offers good outcomes in a difficult clinical situation.

084 A Systematic Error in the Prevalent Web-Based Thoracoscore Calculator: An Example of the Risks of Medical Calculators

Authors: K. Turner[1] A. Ho[2] G. Rø[3]

1 Norfolk and Norwich University Hospital, United Kingdom; 2 Imperial College, London, United Kingdom; 3 University of Durham, United Kingdom

Objectives: Thoracoscore is a well-validated model for predicting in-hospital mortality following thoracic surgery and is increasingly used to inform patients of operative risk prior to gaining consent for surgery. In clinical practice, complex multivariate risk calculations are frequently performed using 'medical calculators' on websites or smartphone applications. We noted that the Thoracoscores generated by the prevalent web-based Thoracoscore calculator provided by Société Française d'Anesthésie et de Réanimation differed to those calculated independently. We have sort to clarify the source of the observed discrepancy.

Methods: We exhaustively generated all 1,152 possible discrete Thorascores using the Javascript implementation of Thoracoscore algorithm used by the Société Française d'Anesthésie et de Réanimation's website. We then compared these values with Thoracoscores independently generated in SciPy to ensure correct floating-point arithmetic.

Results: We found that the Société Française d'Anesthésie et de Réanimation's Thoracoscore calculator has a systematic rounding error, with a mean absolute error of 0.0449% (SD 0.0029%) corresponding to a relative error of 0.07% to 75.40%. Examination of the Javascript source code revealed that this error is introduced by an incorrect rounding function when rounding generated scores to two decimal places.

Conclusions: In this instance, the relative error is small at significant Thoracoscores, suggesting that this error is unlikely to influence clinical decisions. However, it illustrates the wider point that whilst clinical scoring systems are critically appraised as part of the peer review process, medical calculators are not subject to such scrutiny despite their prevalence in current practice. We propose that medical calculators should be subject to an equivalent review process that the scoring systems themselves are subject to.

085 Post-Operative Follow-up of Lung Cancer Patients: Do we Need a Radiologist?

Authors: V. Fretwell; R.D. Page

Liverpool Heart and Chest Hospital, United Kingdom

Objectives: The chest x-ray (CXR) is a routine part of the follow up of post-operative lung cancer patients. Some patients are falsely reassured that their CXR is normal by the surgeon in clinic and face the worry of being asked to return to hospital for an early review after formal radiology reporting shows an abnormality. Our aim was to ascertain the proportion of patients affected in this way and whether important diagnoses may be missed with this follow-up protocol.

Methods: The records of 100 consecutive patients discharged from hospital after lung resection for non-small cell primary cancer with at least two years of follow up were studied. Outcome measures were normality or abnormality of the CXR, need for subsequent CT scanning and a diagnosis of cancer recurrence.

Results: Sixty-eight patients had 348 CXR's reported as normal by the radiologist. Three of these were felt to be abnormal by the surgeon and of the CT scans arranged as a result, 1 showed a recurrence. The remaining 32 patients had a total of 39 abnormal CXR reports during follow-up; 29 of these were felt to be normal by the surgeon. Twelve of these patients were called back for a CT scan of whom 7 were found to have a recurrence.

Conclusions: Formal reporting of CXR's can pick up abnormalities missed by surgeons in clinic. Real time reporting should be considered to prevent the need for an unplanned recall of patients and the distress that this may cause.

086 The Use of Vacuum Assisted Closure Therapy in the Management of Infected Pleural Spaces

Authors: Shah Begum; K. Papagiannopoulos

Institute of Oncology, St James's Hospital, United Kingdom

Objectives: Conventionally patients with pleural empyemas who are deemed unfit for or whose pathology is unsuitable for a decortication or thoracoplasty are condemned to a thoracostomy. Such treatment involves frequent often painful dressing changes or a long term drainage bag applications and is associated with prolonged hospitalisation and healing times. This is cosmetically unappealing and often malodorous causing considerable social distress. Here we present our experience of utilising vacuum-assisted closure (VAC) therapy in the management of persistent infected pleural spaces.

Methods: Ten patients with a pleural empyema underwent open drainage and fenestration of their pleural cavity. A VAC therapy system was inserted either intra-operatively or on the ward the day after surgery. This was changed for a portable VAC therapy system 3 days later. Patients were discharged home the next day. Several patients did have the portable system inserted during their initial procedure. The VAC dressing was changed by nurses in the community every 3-7 days depending the volume of wound exudates.

Results: In all patients the use of VAC therapy eliminated the need for daily dressing changes; it also facilitated early discharge and rehabilitation. All our patients were discharged home with a VAC system in-situ. Several patients returned to work whilst still on treatment. Ultimately the VAC system sterilised the cavity and significantly reduced its volume. None of our patients required a second procedure to close the cavity. The overall length of hospitalisation was shorter. None of patients experienced any problems with the use of the VAC therapy system in their home or work environment.

Conclusions: Our experience suggests that the use of VAC therapy is a valuable tool in the management of pleural empyemas. It facilitates early recovery, reduces hospital stay, improves patient satisfaction and is cost effective.

087 The Use of Endobronchial Valves for the Control of Complex Air Leaks

Authors: G. Elshafie; O. Nawaytou; H. Fallouh; P. Vaughan; M. Kornaszewska

University Hospital of Wales, United Kingdom

Objectives: The management of complex air leaks and bronchopleural fistulae can be a very challenging exercise in patients with associated severe parenchymal lung disease such as necrotizing inflammation or terminal emphysema. Surgical options, if present, are often limited and associated with high morbidity and mortality risks in these very sick patients. Recently, there have been a few reports of successful air leak control using various endobronchial procedures. Here we present our experience in using endobronchial valves (EBV) for these patients.

Methods: Between June 2008 and November 2011, 6 patients with complex air leaks were considered for EBV therapy following failure or unsuitability of conventional surgical options. The aetiology of the air leaks was a necrotizing lung infection in 2 patients, bullous lung disease in 2, and 2 bronchopleural fistulae following lung resection and a ruptured fungal abscess. The mean American Society of Anaesthesiologists score was 3.67±0.82 and 3 patients were ventilator dependant. The mean duration of air leakage prior to EBV insertion was 55.8±31.2 days.

Results: All the procedures were done under sedation and using flexible bronchoscopy. Identification of the segmental bronchial leak was successful in 5 of the 6 attempted patients and failed in one. This was then occluded using a unidirectional Zephyr EBV (Pulmonx Corporation, CA, USA). This resulted in immediate complete cessation or marked decrease of the air leak fraction which translated into significant clinical improvement (as will be discussed for every patient). None of the patients suffered any procedure related morbidity or mortality.

Conclusions: In our experience EBV use made an immediate and significant impact upon the management and prognosis of patients with complex air leaks. They are a valuable tool in the armamentarium of thoracic surgeons dealing with this pathology especially when surgical options have been exhausted or deemed unsuitable.

088 New Rib-Specific Fixation Systems: Time to Consider More Aggressive Operative Management of Traumatic Rib Fractures?

Authors: A.R. Kendal; U. Abah; N. D'Souza; P.E. Belcher; E.A. Black

John Radcliffe Hospital, United Kingdom

Objectives: The optimal management of traumatic ribs fractures remains controversial. Although recent NICE guidelines (IPG361) recommend internal rib fixation to stabilise a flail chest wall, there is little reported on the role of early rib fracture fixation in preventing complications. It is also not clear whether rib fixation of non-flail segments is beneficial. We report our experience of early surgical intervention in both flail and non-flail chest wall injuries using a variety of different metal fixation systems.

Methods: A retrospective analysis was conducted of all patients that underwent open reduction and internal fixation of multiple rib fractures, irrespective of flail or non flail segment, between May 2009 and August 2011.

Results: 21 patients with traumatic rib fractures underwent open reduction and internal fixation, of which 16 were emergency cases. 76% of patients had a flail chest segment. A mean of 3 (SD 1.3) ribs were fixed per patient using Synthes MatrixRib, intramedullary splints, StraCos clips or StraTos bars. VATS was performed in 16 patients in order to help assess associated thoracic injuries and to assist in open reduction of the fractures. The peri-operative mortality rate was zero. The median length of post-operative stay was 7 days and only one patient required ventilation.

Conclusions: In accordance with NICE findings, open reduction and internal fixation of multiple traumatic rib fractures proved a safe and effective management of flail chest segments. Based on our experience, we would recommend the use of specifically contoured rib fixation plates. Moreover, our successful management of non-flail segments with early rib fixation should prompt thoracic surgeons to explore the potential benefits of extending operative management beyond current NICE guidelines.

089 Outcome of Aortic Valve Repair in Paediatric Cardiothoracic Surgery

Authors: Natasha Prior[1] A. Hatem[1] P. Reddy[1] R. Dhannapuneni[1] A. Corno[2] P. Venugopal[1] N. Alphonso[1]

1 Alder Hey Children's Hospital, United Kingdom; 2 Prince Salman Heart Center, Saudi Arabia, Saudi Arabia

Objectives: Aortic valve disease occurs in approximately 4 per thousand births. Management options include medical treatment, balloon valvuloplasty, mechanical valve replacement, bioprosthesis, homograft, Ross procedure, or aortic valve repair. In this study, we retrospectively evaluated our clinical experience with aortic valve repair in children over a 5 year time period.

Methods: From February 2006 until November 2011, 39 aortic valve repairs were performed. In this retrospective study, the outcomes in terms of early and late mortality, ICU and hospital stay, and failed procedure requiring re-operation, or cardiological interventional procedure were reviewed.

Results: The mean age at time of surgery was 7.3+/-6.0 years, mean weight was 26.5+/-21.3 Kg and body surface area was 0.88+/-0.52 m2. Surgical indication included aortic regurgitation in 35.9 % of cases (n = 14), aortic stenosis in 33.3 % (n = 13) and mixed aortic valve disease in 30.8 % (n = 12). 11 solitary aortic valve repairs were performed. The remaining 28 cases were aortic valve repairs combined with additional cardiac surgical procedures. Surgical technique of aortic valve repair included:- Commisurotomy (n = 25); valvuloplasty (n = 20) and leaflet reconstruction using pericardium (n = 14) (13 autologous & one bovine). In 36.8 % of cases (n=14), a combination of techniques was employed to effect repair. Mean cardiopulmonary bypass time was 146+/-91 minutes with mean cross-clamp time of 103+/-60 minutes. The mean follow-up period was for 289.4+/-343.6 days and accumulative follow up was a total of 30.9 years. There were no early deaths and three (7.7%) late deaths. All late deaths occurred in children receiving combined complex congenital heart surgery. Post-operative complications occurred in 23.1 % (n = 9) of patients. The mean ICU stay was 7.8+/-17.8 days and mean post-operative hospital stay was 11.6+/-18.4 days. None of the patients proceeded to a post-operative cardiological interventional procedure but two (5.1 %) patients required surgical revision after aortic valve repair (one at 24 hours and one at 21 days post-op).

Conclusions: After 5 years of experience with aortic valve repair, we demonstrate the acceptability of this procedure as a management option in paediatric aortic valve disease

090 Repair of Aortic Coarctation in Low Birth Weight Neonates Can Be Achieved Safely and With Minimal Chance of Recurrence

Authors: Qiang Chen; T. Fleming; M. Caputo; A. Tometzki; S. Stoica; A. Parry

Bristol Royal Hospital for Children, United Kingdom

Objectives: Though a significant number of low birth weight and premature neonates are born with aortic coarctation waiting for the child to grow before intervening rarely permits significant useful weight gain and puts the child at risk of interim complications. Previous studies of operating on these patients have shown a high incidence of complications and recurrence. We reviewed our data to ascertain whether modern approaches have reduced the operative risk to these children.

Methods: All patients below 2kg presenting with coarctation since April 2005 were studied by retrospective chart review. All underwent surgical repair; there were 8 patients. In-hospital and medium term follow-up data were collected. All patients underwent extended and-to-side repair of the coarctation.

Results: Data are expressed as median (range). Weight at time of surgery was 1.8kg (1.6-2.0). There were no deaths, in-hospital or during follow-up. In-hospital stay was 20 days (8-47). At follow-up of 32 months (18-72) echocardiographic velocity across the repair was 1.6m/sec (1.4-4.^{5} mean 2.1m/sec). One patient had evidence of recoarctation and required balloon coarctoplasty followed by stenting. This patient had grossly abnormal vessels at the time of initial surgery with an aortic wall thickness of >3mm.

Conclusions: Neonates below 2kg can undergo coarctation repair safely and with no increased chance of recurrence compared to bigger children. Waiting for growth in this cohort of patients cannot therefore be justified.

091 Outcome of Contegra valved Conduit in Paediatric Cardiothoracic Surgery

Authors: Tash Prior[1] A. Hatem[1] R.R.V. Dhannapuneni[1] G. Gladman[1] I. Peart[1] A. Davis[1] P. Venugopal[1] N. Alphonso[1] A.F. Corno[2]

1 Alder Hey Children's Hospital, United Kingdom; 2 King Fahad Medical City, Saudi Arabia

Objectives: Contegra, a glutaraldehyde fixed bovine jugular vein, has been developed for use in the surgical treatment of complex congenital heart defects. In this study, we retrospectively evaluated our clinical experience with Contegra biological valved conduit implantation.

Methods: Over 120 months, 196 Contegra valved conduit implantations were performed. In this retrospective study, the outcomes in terms of early and late mortalities, of ICU and hospital stay, conduit failure requiring re-operation, or cardiological interventional procedure were reviewed.

Results: The mean patient age at time of surgery was 6.4+/-5.6 years and the mean weight was 22.5+/-20.9 Kg. Surgical indication included right ventricular outflow tract reconstruction (n=130), replacement of a previously implanted conduit from the right ventricle to the pulmonary artery (n=36), Ross procedure (n=24) and aortic arch reconstruction (n=6). The mean diameter of the implanted Contegra valved conduit was 18.1+/-3.5 mm. There were five (2.6%) early deaths and one (0.5%) late death. The mean ICU stay was 4.3+/-6.9 days and mean post-operative hospital stay was 13.6+/-14.6 days. The mean follow-up period was 784.3+/-823.7 days, for a total of 1.8 year/patient follow-up (range 1 month to 10 years). Nine (4.5%) patients required a cardiological interventional procedure within a mean interval of 2.5+/-1.4 years, while 11 (5.6%) patients required surgical revision following implantation of Contegra.

Conclusions: After 10 years of experience with Contegra, we continue to use this biological valved conduit as a reliable alternative to homografts, without any significant negative impact on observed outcome.

092 The Ross Operation for Patients with Congenital Heart Disease: 11-year Trends and Results from the UK National Database

Authors: S. Stoica; Q. Chen; S. Roldan; R. Capoun; M. Caputo; A. Parry

Bristol Children's Hospital, United Kingdom

Objectives: Treating congenital aortic valve disease may be faced with difficult choices. Balloon dilatation is followed by further catheter or surgical palliation until the patient has grown enough to have an adult-size valve. Alternatively, root replacement (Ross or non-Ross) is performed in selected cases. The pulmonary autograft, as the only living valve, has proved its superiority in paediatric and adult studies including randomized trials. We aimed to examine UK trends and results for the Ross operation.

Methods: Open access examination of the Congenital Central Cardiac Audit Database between 2000-2011. Proportions were compared with the goodness of fit chi-squared test.

Results: 2206 aortic valve procedures were done in the 0-16 years age group and 1824 in patients aged 16-30 years. The average 30-day and 1-year survival after Ross is 99.3% and 98.7% respectively, and in the last 4 years it has been 100%. In children, the proportion of balloon valvuloplasty increased from an average of 43% in 2000-2006 to 53% in 2007-2011, whereas the Ross operation decreased from 22% to 16% ($p<0.001$). In young adults, the figures are an increase from 49% to 58% for aortic valve replacement compared to a decrease from 23% to 9% for Ross ($p<0.001$). The year on year changes show a marked trend.

Conclusions: Despite a great track record, a notable decrease is taking place in the utilisation of the Ross operation for children and young adults. Further studies are needed to examine short and long-term survival and freedom from reintervention and to refine indications in all the procedures employed to treat congenital aortic valve disease.

093 St. Jude Bileaflets Mechanical Pulmonary Valve Replacement: A Reasonable Alternative?

Authors: Bassel Al-Alao; D. Trivedi; A.N.J. Graham; D.G. Gladstone; A.E. Wood

Royal Victoria Hospital, United Kingdom

Objectives: Pulmonary valve replacement (PVR) is now the commonest valve operation performed in congenital heart disease for sever pulmonary regurgitation mostly after correction of Tetralogy of Fallot (TOF). Most surgeons use an allograft or Xenograft as a replacement device; both deteriorate over time, making re-operations (sternotomy) necessary

Methods: To evaluate results of mechanical valves in pulmonary position in patients with pulmonary regurgitation and right ventricular dysfunction as an alternative to Bioprostheses. St. Jude bileaflets mechanical valves were implanted in 6 patients (Male:4 Female:2) previously operated on for TOF (3 patients), Pulmonary Atresia plus VSD (3 patients) and Trancus Arteriosus (1 patient) with severe right ventricular dysfunction secondary to gross pulmonary regurgitation. Age at operation (PVR) ranged from 8 years to 43 years (mean 25.5).

Results: All patients survived PVR and are currently well. Hospital (30 days) mortality = 0%, early and late mortality = 0%. Follow up ranges from 1 year to 19 years 4 months. Mean follow up was 5.5 years (12,165 days). All patients are re-operation free and thrombo-embolic free. Target INR anticoagulation was 2.5 - 3.0. All have good right ventricular function.

Conclusions: St. Jude bileaflet mechanical valve replacement in the pulmonary position may represent a reasonable alternative to bioprosthetic valves.

094 Effect of Dexmeditomidine on Pulmonary Arterial Pressure in Children with Congenital Heart Disease

Authors: D.T. Inderbitzin[1] N.R. Kadam[2] O. Reuthebuch[1] S. Maiya[3] K. Muralidhar[2]

1 Clinic for Cardiac Surgery Basel-Bern, University Hospital Basel, Switzerland; 2 Department of Anaesthesia, Narayana Hrudayalaya Hospital, Bangalore, India; 3 Department of Cardiology, Narayana Hrudayalaya Hospital, Bangalore, India

Objective: Dexmeditomidine (Dex), a centrally acting sedating, antalgic, sympatholytic α2-agonist is known to reduce heart rate and systemic blood pressure (SBD) without significant respiratory depression. The effect of Dex on pulmonary arterial pressure (PAP) in children undergoing cardiac catheterization is presented.

Method: 19 fasted children with elevated pulmonary arterial pressure (PAP; systolic >30 mmHg, mean >22 mmHg) undergoing elective cardiac catheterization where provided sedation after intra-venous glycopyrolate 8 µg/kg with midazolam 0.05 mg/kg and ketamine 1 mg/kg, spontaneously breathing. PAP was measured by pulmonary catheter over 10 minutes during Dex administration 1ug/kg fractionated in 10 doses. Heart rate, SBP, PAP, SBP/PAP-ratio, respiration rate, SO2 were recorded at baseline, after ketamine-, prior, during (every 2 min) and after (every 5 min) Dex administration. Entities such as fixed pulmonary stenosis, right ventricular outflow tract obstruction, arrhythmia, were excluded. Respiratory depression was monitored by arterial blood gas analysis. The University of Michigan Sedation Score was recorded every 30 min after anesthesia till patient was fully awake (UMMS-Score = 1).

Results: n=19. Characteristics: 5 male, mean age 52 months (8 months-11 years), mean weight 13.5 kg (7.5-23 kg). Procedures: 2 ASD closures, 4 VSD closures, 11 PDA closures, 2 diagnostic catheterizations. Men intervention time 90.2 min (65-160 min). After Dex administration mean heart rate significantly declined by 10.3% (p=0.000 ANOVA for repeated measures) whereas systolic, diastolic and mean pulmonary and systemic arterial pressures were not significantly affected. There was no respiratory depression as measured by arterial blood gas analysis.

Conclusions: Dex had no significant effect on PAP nor respiration and reduced the required total ketamine dose. Hence it can be safely used in children with and without pulmonary undergoing cardiac catheterization procedures.

095 Management of Residual Severe Coronary Disease Following Primary PCI Since the Introduction of ESC / EACTS Guidelines on Myocardial Revascularisation

Authors: Martin Yates; G.K.R. Soppa; O. Valencia; M. Jahangiri

Department of Cardiac Surgery, St George's Hospital, United Kingdom

Objectives: We set out to assess the management of patients with residual surgical disease following primary percutaneous coronary intervention (PCI), in view of recent European Society of Cardiology / European Association of Cardiothoracic Surgery (ESC / EACTS) guidelines on myocardial revascularisation.

Methods: Patients undergoing primary PCI from January to June 2011 at a single, high volume cardiothoracic centre in the United Kingdom were identified from the British Cardiovascular Intervention Society Database. Demographics and coronary anatomy were determined from this database. Those with residual left main stem (LMS), proximal left anterior descending (LAD) or three vessel disease following primary PCI were investigated. ESC / EACTS Guidelines suggest these patients should be referred for surgical revascularisation. Electronic patient records and minutes of Joint Cardiology / Cardiothoracic meetings were reviewed to determine outcome. Outcome measures were medical management, further PCI or surgical revascularisation.

Results: There were 195 emergency PCI from January to June 2011 of which 103 (53%) had left main stem, proximal LAD or three vessel disease. In 31 (30%) this severe pattern of disease persisted following primary PCI. The majority, 23 (74%) were followed up in the cardiology clinic. Five patients (16%) had planned staged repeat PCI. Of the 31 who should have had coronary artery bypass grafts, only 3 (10%) were referred to a cardiac surgeon. Two patients died during follow up of 171 days (range 97 to 294).

Conclusions: The majority of patients with residual severe coronary artery disease following Primary PCI are not discussed with a surgeon despite the fact that they will benefit from surgical revascularisation. Clear guidelines are required to guide management of this group of patients.

096 Myocardial Revascularisation - Are we Following European Guidelines?

Authors: Victor Kung; O. Jarral; D.J. McCormack; Z. Astroulakis; A. Shipolini

London Chest Hospital, United Kingdom

Objectives: The 2010 joint ESC/EACTS guidelines on myocardial revascularisation describe a standard of care whereby all patients with stable multivessel coronary artery be treated by a Heart Team (consisting of a non-interventional cardiologist, a cardiac surgeon, and an interventional cardiologist) to provide optimal management strategy. Surgical revascularization remains the gold-standard in treating complex multi-vessel disease (proximal LAD, 3 vessel or LMS disease). When the proposed management strategy diverges from this level 1A recommendation for surgery, the case should be reviewed by the Heart Team such that a consensus can be sought. Ad-hoc PCI in these cases represents substandard care.

Methods: We reviewed all angiograms performed within a central London cardiac centre in November 2010. All angiograms were prospectively reported by an interventional cardiologist. Only elective diagnostic angiograms were included. Subsequent management was reviewed including whether the patient was afforded a "Heart Team" review in determining optimal management

Results: 433 angiograms were performed in total, of which 138 elective diagnostic angiograms were included in this study.

The breakdown of coronary disease burden, decision making processes and management is shown in table 1.

	1VD/2VD (not proximal LAD)	*1VD/2VD (proximal LAD)*	*3VD*	*LMS*
Level of recommendation favouring surgery	IIb CIA	IA	IA	
Heart Team Review	1	5	8	1
Referred directly for surgery	4	3	6	16
Independent cardiology management (PCI)	29	8	4	1
Independent cardiology management (Medical)	27	9	0	0
Further investigation performed	10	5	0	1
TOTAL	71	30	18	19

Conclusions: Of the 67 patients with level 1A recommendation for surgery just 25 (37%) were referred directly for surgery. Of concern, 22 (33%) were managed independently by cardiologists. Thirteen of these underwent PCI without further discussion within the Heart Team, 9 were provided medical management. 14 patients with level 1A recommendation for surgery were discussed within the Heart Team. We believe this audit represents under-utilisation of the Heart Team in determining optimal management for patients with complex coronary disease.

097 Effect of Diabetes and Chronic Kidney Disease on Long-Term Survival After Coronary Artery Bypass Grafting

Authors: Sean Gallagher; D.A. Jones; M.J. Lovell; S. Hassan; A. Wragg; A. Kapur; R. Uppal; M.M. Yaqoob

Barts and the London NHS Trust, United Kingdom

Objectives: Both diabetes mellitus (DM) and chronic kidney disease (CKD) are predictors of mortality following coronary artery bypass grafting (CABG). The prognostic importance of DM in combination with CKD after CABG has not been specifically studied. We sought to determine the effects of DM and CKD upon long term outcomes in patients undergoing CABG.

Methods: An observational registry study including 4889 patients undergoing CABG at a tertiary cardiac centre between 2003 and 2008 was conducted. CKD was defined as an eGFR<60 mls/min. Patients were divided into 4 groups: Neither DM nor CKD (2318 patients); DM alone (1060 patients); CKD alone (1049 patients) and both DM and CKD (462 patients). Primary outcome measure was all-cause mortality determined via Office of National Statistics data. Long-term survival was analyzed with a risk-adjusted Cox proportional hazards regression model. Median follow-up period was 5.5 years.

Results: Patient characteristics are summarized in Table 1. 5 year all cause mortality in patients with DM and CKD was 28.5%, 20.5% in patients with CKD alone, 11.1% in patients with DM alone and 9.0% in patients with neither DM nor CKD, log rank test p<0.0001. Patients with CKD and DM, CKD alone, DM alone had a relative hazard ratio for all cause long term mortality of 1.95 (CI 1.57 to 2.41), HR 1.31 (CI 1.08 to 1.59) and HR 1.27 (CI 1.03 to 1.55) respectively when compared with patients with neither DM nor CKD.

Conclusions: Both DM and CKD are associated with worse survival following CABG. Survival following CABG is greatly affected by the combination of DM and CKD. Excessive mortality after hospital discharge in this group is most likely due to the augmentation of vascular risk factors and therapeutic nihilism. Currently, aggressive medical therapy is the mainstay of therapy but further research within this high-risk subgroup is urgently needed.

Table 1 overleaf.

Table 1. Clinical characteristics of study cohort

	No DM No CKD n=2318	DM No CKD n=1060	No DM CKD n=1049	DM CKD n=462	Significance
Age (yrs±SD)	63.9 (9.2)	63.4 (8.9)	74.4 (6.5)	71.9 (6.9)	<0.0001
Female, n(%)	307 (13.2)	192 (18.1)	341 (32.5)	148 (32.0)	<0.0001
Hypertension, n(%)	1722 (74.3)	913 (86.1)	808 (77.0)	386 (83.5)	<0.0001
Previous Myocardial Infarction, n(%)	996 (43.0)	512 (48.3)	484 (46.1)	263 (56.9)	<0.0001
Previous stroke, n(%)	135 (5.8)	68 (6.4)	85 (8.1)	45(11.3)	<0.0001
COPD, n(%)	150 (6.5)	99 (9.3)	116 (11.1)	62 (13.4)	<0.0001
Peripheral Vascular Disease, n(%)	201 (8.7)	166 (15.7)	166 (15.8)	110 (23.8)	<0.0001
LV Function < 50%, n(%)	798 (34.5)	432 (40.8)	405 (38.6)	243 (52.6)	<0.0001
Euroscore, median (IQR)	2.1 (1.3 to 3.7)	2.3 (1.3 to 4.6)	4.5 (2.9 to 8.1)	4.9 (2.9 to 9.7)	<0.0001

098 Cardioplegia, Fibrillatory Arrest or Off-Pump for CABG? Insights From 8,779 Operations Using Propensity Matching and Principal Component Analysis

Authors: Dumbor Ngaage[1] A. Tang[2] F. Sogliani[2]

1 Basildon and Thurrock University Hospitals NHS Foundation Trust, United Kingdom; 2 Blackpool Teaching Hospitals, United Kingdom

Objectives: Different myocardial protection strategies are described, often, as competing techniques for CABG. The varied anatomic and physiologic abnormalities in this patient population may have implications for myocardial protection. We therefore, sought to identify the clinical impact of the different strategies in subsets of CABG patients.

Methods: Prospectively collected data for primary CABG patients between 1996 and 2010 (n=8,779) were analysed. Three groups, defined by myocardial protection strategy; cardioplegia (CPA, n=3862, 44%), cross-clamp fibrillation (XCF, n=3751, 43%) and continuous coronary perfusion (OPCAB, n=1166, 13%), were subjected to propensity score matching. Early and late outcomes were compared and the impact of myocardial protection strategy on major adverse cardiac and cerebrovascular events (MACCE) was determined using logistic regression and survival analysis. The association of patterns ("themes") based on baseline patient characteristics and MACCE were explored within each strategy using principal component analysis.

Results: There were vast differences in baseline characteristics between groups before restrictive matching. The median ages of the matched groups (CPA=1055, XCF=1055, OPCAB=1053) were 65 years. Significantly fewer grafts were constructed with OPCAB but there were no remarkable differences in early and 10-year survival rates between groups. MACCE rate was lower with OPCAB. Principal component analysis identified patients with factors 1 (low ejection fraction, prior myocardial infarction, non-elective operation), 4 (hypertension, high body mass index, hypercholesterolaemia) and 5 (older age, left main stem disease) to be at risk for MACCE with CPA and XCF, while for OPCAB, factors 5 and 6 (extracardiac arteriopathy) increased MACCE risk.

Conclusions: The three myocardial protection strategies for CABG are complementary and, when used in the right patient group, have comparable early and late outcomes.

099 The Effect of ESC / EACTS Guidelines on Myocardial Revascularisation on Referral Pattersn in Cardiac Surgery

Authors: M.T. Yates; G.K.R. Soppa; O. Valencia; S.G. Jones; M. Jahangiri

Department of Cardiac Surgery, St Georges Hospital, United Kingdom

Objectives: Joint guidelines on myocardial revascularization were published by European Society of Cardiology and European Association for Cardiothoracic Surgery (ESC/EACTS). Surgical disease is defined as left main stem, proximal LAD or three vessel disease. Patients with such pathology should be discussed with a surgeon prior to revascularization and ad hoc percutaneous coronary intervention (PCI) has no elective indication in these categories. We assess the impact of the guidelines on referral patterns to a cardiac surgery service at a large volume cardiac centre in the UK.

Methods: ESC/EACTS Guidelines were published in August 2010. All patients with surgical disease undergoing PCI at one institution were identified from the British Cardiovascular Intervention Society Database six months before (Jan-June 2010) and six months after (Jan-June 2011) their introduction. Treatment allocation and referral patterns were collected from minutes of Multidisciplinary Meeting (MDM) and electronic patient records.

Results: 197 patients underwent elective PCI pre guidelines of which 62 had surgical disease. Only six (10%) were discussed at a MDM prior to intervention. Following introduction of the guidelines, 164 elective PCI were performed, of which 42 had surgical disease. Again only eight (19%) were discussed at MDM prior to intervention (p=NS). Follow up was a median of 17 (15-20) months for pre and 4 (2 - 8) months for post guideline groups.

7 (12.5%) patients pre-guidelines underwent further PCI and mortality was 5% (n=3) during follow up. Post guidelines, 2 (5%) underwent further PCI and there were no deaths.

Ad hoc PCI in surgical disease occurred in 8 (13%) patients pre guidelines and was unchanged at 9 (21%) patients post guidelines (p=NS).

Conclusions: Despite ESC/EACTS Guidelines and widespread publicity, inappropriate elective and ad hoc PCI is performed in a significant number of patients who would clearly benefit from surgical revascularisation.

100 Pump Head - Fact or Fiction? Cognitive Outcomes After On- Versus Off-Pump Coronary Revascularisation: A Meta-Analysis

Authors: R.A. Sykes[1] J. Anderson[1] E.D. Kennedy[1] S.A. Mackenzie[1] M.M.H. Farhan-Alanie[1] D.E. Moore[1] R.P. Alston[2] Y. Ang[1] S. Chen[1] K. Choy[1]

1 University of Edinburgh, United Kingdom; 2 Royal Infirmary of Edinburgh, United Kingdom

Objectives: In the last two decades, coronary artery bypass grafting (CABG) surgery has been performed without cardiopulmonary bypass (CPB); termed 'off-pump'. A strong motivation for performing off-pump CABG surgery was a reduction in the incidence of cognitive decline. However, accumulating evidence from studies comparing on- and off-pump CABG surgery suggest that CPB may not be the cause of cognitive decline. Objectives. The aim of this study was to systematically review the literature and perform a meta-analysis of cognition following on- and off-pump CABG surgery.

Methods: A systematic literature search conducted across four databases (Medline, Embase, PsychINFO and The Cochrane Library) yielded twelve studies totalling 2251 patients that could be included in the meta-analysis. The inclusion criteria required randomised control trials reporting cognitive outcomes in on- versus off-pump CABG surgery. Data extraction enabled results of seven cognitive tests (Auditory Verbal Learning Test, Grooved Pegboard, Trail-Making A and B, Digit Symbol, Digit Span, and Stroop Colour Word Test) to be amalgamated.

Results: Results report early and late postoperative test score changes from preoperative baseline. No significant differences were found between on- and off-pump groups across all tests.

Conclusions: To-date this is the largest meta-analysis of cognition comparing on- and off-pump procedures and is consistent with earlier reviews. These results are highly suggestive that there may not be a difference in cognitive outcome between on- and off-pump CABG surgery.

101 Successful Model of Stem Cell Accumulation on Decellularised Vessels: A Step Towards Tissue Engineered Graft

Authors: Sion Jones[1] Y. Hu[2] Q. Xu[2] M. Jahangiri[1]

1 St George's Hospital, United Kingdom; 2 King's College London, United Kingdom

Objectives: Restenosis rates for grafts following CABG vary according to the conduit used and the severity of the native disease. The majority of grafts are saphenous vein and the long term patency for these has been described to be 60% at ten years. In addition, a subset of patients with native coronary artery disease do not have suitable conduits. The field of tissue engineering offers an opportunity to develop new conduits for these circumstances.

Methods: Samples of human LIMA side branches were collected from patients undergoing CABG and were decellularised using sodium dodecyl sulphate. They were subsequently grafted as arterial grafts in a murine model and explanted at two or four weeks. Grafts were examined using immuno-histochemical techniques for cell markers and cells derived from the grafts were cultured.

Results: LIMA branches were fully decellularised and successfully implanted into a murine model. Grafts were repopulated by cells expressing stem cell markers (CD31, CD34) and subsequently expressed markers of mature endothelial cells (von Willebrand Factor) as well as smooth muscle cell markers (calponin, myosin heavy chain). The migratory capacity of the cultured cells was found to be significantly higher than that of mouse smooth muscle cells ($p<0.001$). The proliferative capacity of these cells was lower than that of native murine smooth muscle cells ($p<0.001$).

Conclusions: This model allows the study of cellular accumulation on human grafts. Decellularised grafts are repopulated by cells expressing stem cells markers and subsequently express both smooth muscle and endothelial cell markers. While these cells expressed a lower proliferative capacity than native cells, they had a greater capacity for migration which is a necessary step for repopulation of the grafts.

102 Routine Water Soluble Contrast Swallow Has Limited Clinical Value in the Detection of Anastomotic Leaks Following Oesophagectomy

Authors: S.M. Love; S. Bruce; T.S. Athwal; M. Brett; N. Howes; M. Hartley

Liverpool Heart and Chest Hospital NHS Foundation Trust, United Kingdom

Objective: Water-soluble contrast swallow (WSCS) is performed following oesophagectomy to assess anastomotic integrity before commencing oral intake. This study, the largest in the UK to date, challenges the routine use of WSCS following oesophagectomy.

Methods: All patients undergoing open transthoracic oesophagectomy for oesophageal cancer with intrathoracic anastomosis, within a supra-regional upper GI cancer centre, were registered on a prospective database between 2006 and 2011. WSCS results, anastomotic leak rate and the modality of leak detection were analysed.

Results: During the study period, 116 oesophagectomies were performed. WSCS was undertaken in 97 (84%) cases on a median of day 5 (range 3-8) post operatively; 95 (98%) WSCS reported no evidence of a leak, 2 studies reported a leak and 1 study was equivocal. WSCS was not performed in 19 (16%) cases; 10 patients developed early clinical signs suggestive of an anastomotic leak and were immediately imaged by computed tomography (CT), 8 had a prolonged ITU stay due to cardiorespiratory complications whilst 1 patient died peri-operatively.

There were 6 (5%) anastomotic leaks of which 3 patients had immediate CT whilst 3 patients had WSCS of which 2 patients had a CT after a positive or equivocal finding and 1 patient had no WSCS evidence of leak but developed sepsis and CT confirmed a leak. Clinical signs suggestive of a leak were evident in all patients within 7 days post-operatively.

Conclusions: Routine WSCS has limited value in the detection of anastomotic leak following oesophagectomy. Patients with an anastomotic leaks developed clinical signs suggestive of a leak; subsequently confirmed via CT. WSCS altered the management in just 2% of cases.

103 Obesity Does Not Reduce Lymph Node Yield From Oesophagectomy

Authors: Susannah Love; S. Bruce; T.S. Athwal; M. Shackcloth; M. Hartley; R. Page; N. Howes

Liverpool Heart and Chest Hospital, United Kingdom

Objectives: The UICC TNM (7th edition) staging system for oesophageal cancer recommends at least 6 lymph nodes are harvested with the surgical specimen to appropriately stage the disease. This study investigated the impact of obesity, a significant risk factor for oesophageal cancer, on lymph node yields from open transthoracic oesophagectomy at a supra-regional upper GI cancer centre.

Methods: A prospective database of all patients undergoing oesophagectomy, with histology proven adenocarcinoma or squamous cell carcinoma of the oesophagus, performed at a supra-regional upper GI cancer centre between 2005 and 2011 were analysed. Histological type, body mass index (BMI) and lymph node harvest was assessed. BMI was classified as underweight (<18.5), normal (18.5-24.99), overweight (>25), and obese (>30).

Results: During the study period, 291 cases were identified with complete data sets available for 269 (92%). There were 196 (73%) cases of adenocarcinoma and 73 (27%) of squamous cell carcinoma. 14 (5%) of patients were underweight, 110 (41%) normal, 100 (37%) overweight and 45 (17%) obese. The median lymph node harvest was 15 in the underweight (range 2-33), normal (2-57) and obese (6-46) groups and 18 in the overweight (6-41) group. Less than 6 lymph nodes were harvested in 11 (4%) cases; none of which were in the obese group.

Conclusions: Obesity does not lead to a reduced lymph node yield at oesophagectomy, in fact it increases the likelihood of a sufficient lymph node yield enabling appropriate staging of the disease.

104 Influence of Gender in Surgically Treated Oesophageal Cancer: 5-Years Review of Single Institution

Authors: Bassel Al-Alao; I. Rychlik; H. Parissis; J. McGuigan

Royal Victoria Hospital, United Kingdom

Objectives: Oesophageal cancer is more commonly described in male patients, and there are far fewer women affected. Gender differences have not been fully investigated. This report explores such differences in clinico-pathologic features, long-term outcome and disease recurrence in women in comparison to those in men.

Methods: A total of 169 patients with oesophageal cancer were surgically treated between 2005 and 2010 (43 [25.4%] females and 126 males). Gender differences in these patients were retrospectively investigated).

Results: Ninety-six patients (57%) survived at end of follow up. Median survival rate was 52 months and a 5-years survival rate was 50%. Median follow up for the whole cohort was 25 months (0 - 79). Fifty patients (30%) developed recurrence at end of follow up. Median disease free progression (DFP) rate was 33 months and 5-years DFP rate was 20%. Data on co-morbidities were only available in 120 patients. Females were more likely to be non smokers (58% vs. 27%; $p<0.007$) and non drinkers (55% vs. 36%; $p<0.05$). Recurrence was less likely in women (19% vs. 35%; $p<0.03$), and Clinico-pathologic features significantly associated with female gender were: squamous cell type (42% vs. 17%; $p<0.001$), complete resection - R0 (82% vs. 62%; $p<0.01$), clear circumferential margins (80% vs. 62%; $p<0.02$), smaller tumor size (32 vs. 39 mm, $p<0.02$) and higher FDG uptake of tumor on pre-operative PET scan (SUVmax 14.4 vs. $10.^{5}p<0.02$.

Conclusions: Recurrence rates were significantly less in females possibly associated with other significant factors mainly squamous cell type, R0 resection and smaller tumour size.

105 Prognosis in Perforated Oesophagus - The Factors Influencing Outcome

Authors: Rory Beattie; K.L. Booth; B. Al-Alao; J. McGuigan; A.D. Muir

Royal Victoria Hospital, United Kingdom

Objectives: We present our experience over a 30 year period with 104 patients in a regional tertiary referral centre for thoracic and oesophageal surgery and look at patient survival with a median follow up of 69.5 months.

Methods: Retrospective case review from 01 January 1980 until 11th November 2011 was performed using prospective operative log books, GP records, the National Death Registry and patient hospital charts.

Results: 60 males (58%) were identified with the majority of perforations being iatrogenic (70.2%). 14 patients died as a result of their perforation (13.5%). Patients diagnosed > 24 hours were significantly more likely to die (31.8% vs. 8.5%; $p<0.01$) and also were associated with longer length of intensive care admission (24 vs. 9 days; $p<0.01$). This time to diagnosis maintained its significance after adjusting for other confounders (OR=5.^{5} 1.4-22) (p=0.016). The median length of hospital stay for all patients was 23 days (5-102) and intensive care admission was 3 days (0-65). Out of 104 patients, 55 (52.9%) were alive on long-term follow-up with a median survival of 16 years (0-29 years). Median follow-up was 70 months (0-355 months).

Conclusions: This study shows early time to diagnosis significantly influenced short term outcome for patients with oesophageal perforation.

106 Prolonged ITU Stay and Greater Morbidity in Cardiac Surgery Patients with Sleep Apnoea: A Report from the East London Sleep & Heart Surgery Study

Authors: A. Hogan[1] S. Ibrahim[2] M. Marshall[3] D.J. McCormack[2] A.M. Openshaw[2] F. Cormack[4] A. Shipolini[2]

1 University College London, NHS Trust, United Kingdom; 2 London Chest Hospital, Barts and the London, NHS Trust, United Kingdom; 3 Research Centre for Primary Health Care and Equity, University of New South Wales, Australia; 4 MRC Brain & Cognition Unit, Cambridge University, United Kingdom

Objectives: Sleep apnoea (SA) is associated with post-operative morbidity, but remains under-diagnosed in cardiac surgery patients. For the first time in UK patients, we administered the Berlin Sleep Questionnaire (BSQ) and conducted an overnight sleep study prior to elective coronary artery bypass surgery +/-valve replacement. We describe the effect of undiagnosed sleep apnoea on post-operative recovery.

Methods: 142 patients are currently enrolled into the Sleep & Heart Surgery Study. Herein we describe data obtained from 136 (125 male; age M65.9, SD10.0) admitted for CABG +/-valve; 131 patients completed the BSQ pre-operatively, the majority of whom had a technically acceptable sleep study.

Results: BSQ scores identified 66/131 patients at high-risk of SA. Sleep studies confirmed an increased apnoea-hypopnoea index (AHI) in the high-risk group when compared to the low-risk group (24.7 SD13.5 vs. 17.7 SD11.9: P=.012). Pre-operatively, the groups were similar in age, EuroScore, and incidence of smoking, diabetes, previous MI/stroke. BMI was higher in the high-risk group (30.7 SD5.3 vs. 27.8 SD4.^{2} P=.001). Graft number (median 3), ASA grade, CPB time and time spent ventilated were also comparable. Post-operatively, compared to the low-risk group, the high-risk group stayed longer in ITU (P=.013), albeit without an extended total stay in hospital, and had increased morbidity score across fifteen variables including return-to-theatre, time to mobilise, new onset AF and desaturations (P=.042). BMI was not independently associated with either of these outcome variables (both P>.08).

Conclusions: SA is common but under-diagnosed in cardiac surgery patients. Only 7.1% of our patients had a prior diagnosis of SA despite half demonstrating high-risk of having this condition. Better recognition and treatment of SA may be important in patients undergoing cardiac surgery, as our data currently suggest an association with prolonged ITU stay and greater morbidity.

107 Video Assisted Thoracoscopic (VATS) Segmentectomy: Equivalent Survival To Lobectomy For Stage IA Lung Cancer

Authors: Harmik Soukiasian; R.J.M. McKenna

Cedars-Sinai Medical Center, USA

Objective: There are concerns that segmentectomy may not be as effective as lobectomy in the treatment of lung cancer. We compared the survival for lung cancers treated with VATS Segmentectomy versus VATS lobectomy.

Methods: Review of the largest single institution experience with VATS segmentectomy in a prospectively collected database.

Results: 149 VATS segmentectomies were performed between 1998-2010. Average age 71.8 yrs old, 87 female, 62 male. Diagnoses included: primary lung cancer 83% (124/149), benign disease 11% (16/149) and metastatic disease 6% (9/149). Of the primary lung cancers, 72% (89/124) were Stage 1A, 18% (22/124) were 1B, 10% (13/124) were Stage 2 and above. Anatomic Segments Resected: 73 Left upper lobe (LUL) Trisegments; 50 Superior Segments; 8 LUL Lingula; 18 other segments (5 Basilar, 5 Posterior single segment; 4 Anterior Single segment; 2 Apical Segment; 1 Left lower lobe Basilar Posterior & Lateral; 1 Right lower lobe Basilar Anterior & Medial). Mean hospital stay for segmentectomy was 4 days (SD=2.89) vs 5 days (SD=4.91) for lobectomy ($p>0.05$). Complication rates were higher in the segmentectomy group with 34% (n=43) vs 15% (n=166) for lobectomy $p<0.00001$. In those with stage 1A lung cancer, there was no difference in survival between patients undergoing VATS segmentectomy (n=89) and those undergoing lobectomy (n=473) ($p>0.05$). However, for stage 1B or higher, survival is significantly worse for segmentectomy ($p=0.00017$).

Conclusions: There is equal survival between VATS segmentectomy and lobectomy for patients undergoing surgery for stage 1A lung cancer. Although minor complications occured more frequently in segmentectomies, their length of stay was shorter. We believe VATS segmentectomy is a reasonable option for patients with stage 1A lung cancer, as it provides equivalent survival to Lobectomy in these patients. However, lobectomy is the preferred treatment for stage 1B and above, as it provides survival that is superior to segmentectomy

108 Is a Wedge Resection Inferior to a Lobectomy for Non Small Cell Lung Cancer?

Authors: Michael Poullis; R. Page; M. Shackcloth; S. Woolley; N. Mediratta; T. Theologou

Liverpool Heart and Chest Hospital, United Kingdom

Objectives: Lobectomy remains the gold standard with regard to potentially curative resection of non small cell carcinoma. Wedge resections are thought to be inferior with regard to 5 year survival compared to lobectomy. Debate however exists in older patients with small peripheral lesions as to the clinical advantage of lobectomy verses wedge resections.

Methods: We retrospectively analysed a prospective thoracic database of patients who had undergone potentially curative surgical resection for stage I non small cell lung cancer (N=1,283). Only patients with adeno, squamous or adenosquamous carcinoma were included. Survival was determined utilising the United Kingdom strategic tracking service. We benchmarked our 5 year survival against the 7th IALSC results. Cox multivariate regression analysis was utilised to determine significant factors determining survival, and receiver operator curve (ROC) analysis was utilised to determine cut of values for these factors.

Results: Benchmarking failed to reveal any significant difference compared to the 7th IALSC results. Crude analysis demonstrated superiority of lobectomy compared to wedge resection, p=0.02. Cox regression analysis determined BMI>30 (p=0.005), and age (p<0.001) as a significant factors affecting survival. ROC analysis revealed a cut off at age 70, and BMI of 30. Kaplan-Meier survival curves demonstrated that patients with a BMI>30 (p=0.7), older than 70 (p=0.53), who have had a PET scan (p=0.52), who underwent a wedge resection for stage I NSCLC had a survival equivalent to those who underwent a lobectomy.

Conclusions: In patients over the age of 70 with stage I NSCLC, wedge resection produces equivalent 5 year survival to lobectomy.

110 Can Vats Segmental Resection Provide Diagnosis and Treatment of Solitary Pulmonary Nodules?

Authors: Federico Mazza; S. Sarvananthan; G. Karapanagiotidis; E. Royston; E. Black

Oxford University Hospitals, United Kingdom

Objective: Progress in imaging techniques has lead to identification of smaller and smaller localized lung lesions and surgery without a tissue diagnosis may be required. Video Assisted Thoracoscopic Surgery (VATS) wedge excision biopsy is helpful but requires an additional strategy in case of malignancy. Can VATS segmental resection provide an alternative one-step operation even for traditionally "difficult" segments?

Methods: Records were reviewed over a period of 30 months. Patients with undiagnosed solitary nodules who had a VATS segmentectomy were included. Descriptive analyses were performed. 25 patients were found; mean age 68 ± 11.3 years, 16 females. 4 were converted to open segmentectomy for bleeding or dense adhesions (conversion rate 16%).

Results: Postoperative pathology was 16 primary lung cancers (9 adenocarcinoma, 5 squamous, 2 carcinoid), 2 had secondary tumours (colorectal and urothelial), 7 were benign. Median 2 (1-3) segments were resected and there was one microscopic incomplete resection, requiring lobectomy later. Systematic lymph node sampling was always performed. One NSCLC patient was pN1 and one pN2. The pT stage was pT1 in 11 and pT2 in 5. The median post-operative length of stay and drain duration were 5.3 days (3-79) and 3 days (2-36). Lower segmentectomies showed a trend of longer drain duration for air leak (9 vs 6 days). The morbidity rate was 20% and 30-days mortality 0%; observed complications were prolonged air leaks for five patients. In the lung cancer subgroup there was no relapse or death, median follow-up was 12.5 months (5-30).

Conclusions: Segmentectomy promises diagnosis, oncological resection and maximal preservation of lung tissue. Although VATS segmentectomy can be achieved with promising early results it is certainly technically challenging and not without complications. We believe that it may offer an alternative to wedge excision, frozen section and possible later lobectomy. A larger cohort is needed in order to assess the efficiency of this approach.

111 Uniportal Video-Assisted Thoracoscopic Lobectomy: Initial Experience

Authors: Diego Gonzalez-Rivas; R. Fenandez Prado; E. Fieira Costa; M. Delgado Roel; L. Mendez Fernandez; M. De la Torre Bravos; J. Garcia Salcedo, Coruña Hospital, Spain

Objectives: Video-assisted thoracoscopic (VATS) approach to lobectomy for non-small cell lung cancer (NSCLC) varies among hospitals. Typically 3 to 4 incisions are made. Our approach has evolved from a 3-port, to 2-port approach to currently a single 4-5 cm incision with no rib spreading. We report our initial experience with single-port VATS lobectomies.

Methods: In June 2010 we started performing VATS lobectomies through a single-incision. From June 2010-November 2011, 45 patients were attempted by this single-incision approach. We have analyzed the outcomes of these patients (p).

Results: Thirty-eight of 45 cases were lobectomies successfully completed by single-incision. (Two cases were converted to open surgery and two cases needed one additional incision; Three patients had an elective uniportal VATS pneumonectomy for tumours crossing the fissures and have not been included in study). The mean age was 66.3±10 years (24 p. male). Right upper lobectomy was the most frequent resection (13p). The most frequent histology was adenocarcinoma (13p). Mean surgical time was 150±40 min (range, 80 to 240 min), mean number of lymph nodes was 12.2 ±4.7 (range, 5 to 24 nodes) and mean number of explored stations was 4.5±1 (range, 3 to 7). The mean tumor size was 2.6±1cm (1-5). The median chest tube duration was 2 days and the median length of hospital stay was 2 days.

Conclusions: Single-incision VATS lobectomy is a feasible and safe procedure with excellent perioperative results when performed by surgeons experienced with double-port technique.

112 Endoscopic (VATS) First Rib Resection for Thoracic Outlet Syndrome

Authors: R.S. George; K. Papagiannopoulos

St James's University Hospital, United Kingdom

Objectives: Background Thoracic outlet syndrome causes neurological symptoms in 93% of cases and vascular symptoms in 7% of cases. Surgical resection is curative. Endoscopic transaxillary assisted first rib resection has been previously reported. In this study we report a novel complete endoscopic intrapleural approach. A 23-years old woman with neurogenic thoracic outlet syndrome identified as muscle wasting in the left hand underwent a complete endoscopic first rib resection. The patient was placed in the left lateral position. She had double lumen intubation. Three standard left VATS ports were placed after isolation of the left lung. The parietal pleura and periosteum overlying the first rib were stripped avoiding injury to the neurovascular bundle. The rib was transected with an endoscopic rib cutter and resected completely in a "piece meal" fashion using endoscopic bone nibblers. The patient was discharged within 48 hours.

Discussion: Complete endoscopic first rib resection using standard VATS ports is a novel alternative surgical approach.

113 Transition from Open to VATS Lobectomy; Manchester Experience.

Authors: Abdul Nasir; P. Krysiak; R. Shah

University Hospital of South Manchester, United Kingdom

Objective: Video assisted thoracoscopic lobectomy is becoming the mainstay of treatment for lung cancer in the last decade. It is presumed to be associated with similar if not reduced rate of complications. The primary aim of this study was to examine the learning curve and safety of this transition.

Methods: Prospectively entered data was reviewed from July 2008 - December 2010. Data was collected for Age, Sex, Pre-op FEV1, Lobe resected, number of drains, modality of pain relief, conversion rate, air-leaks, length of hospital stay, re-admission to ITU and mortality, time to 1st 30 lobectomies.

Results: Total number of patients was 118. Mean age was 67years (Range: 39-90). 47 females and 71 males. Mean Pre-op FEV1 was 2.16 (Range: 1.04-4.2). 70 right, 44 left lobectomies, 2 Bilobectomy, 2 Segmentectomy. Single chest drain was inserted in all patients. Pain relief modality was Epidural n=19, Extrapleural n=27 and paravertebral n=72. Conversion rate was 1.69%. Air-leaks were observed in 4.2%. Average length of stay was 6 days. 1.7% (n=2) required re-admission to ITU for respiratory failure. Histology confirmed 98-primary, 8-secondary, 4-carcinoid, 2-aspergillomas and 6 other pathologies. Mortality was 0.8%. Average time to 1st 30 lobectomies was 20 months.

Conclusions: VATS Lobectomy services can be established with acceptable morbidity or mortality in a reasonable time frame.

114 Video-Assisted Lobectomy Programme Initiation - The Dublin Experience

Authors: Tara Ni Dhonnchu; T. Ni Dhonnchu; J. McCarthy

Mater Misericordiae University Hospital, Ireland

Objectives: Video assisted thoracic surgery (VATs) lobectomy has gained widespread acceptance by the thoracic society globally since the first such procedure was performed over 16 years ago. Until now VATs lobectomy service existed within the Republic of Ireland.

Methods: This was a retrospective, dual centre study which included seventeen, consecutive patients who underwent VATs lobectomy from March 2010 to October 2011. All surgeries were performed by the same consultant thoracic surgeon with the assistant of one surgical trainee.

Results: Of the seventeen patients who underwent VATs lobectomy ten (58.83%) were female and seven (41.17%) were male. The median age was 68 (+/- 14.14). Pathologies included adenocarcinoma (n=7), squamous cell carcinoma (n=4), Carcinoid (typical n=1, atypical n=1), Bronchiectasis, (n=2), Tuberculosis (n=1) and Leiomyoma (n=1). Four patients were converted to open thoracotomy (24%). Two patients were converted secondary to nodal disease (n1), one was converted secondary to adhesions and the fourth patient was converted after a frozen section revealed unclear margins. Of note, the conversion rate in the first eight cases performed was 50%, however no further cases were converted in the remaining 9 patients. Median operative time was 200mins (+/-35.17) however there was a significant trend downwards as operative experience progressed, with the final lobectomy completed in 120 mins. Post operative complications included bowel obstruction (n=1), prolonged air leak (n=1) and atrial fibrillation (n=1). No patient required a blood transfusion. Median hospital stay was 7 days (+/- 9.4). Operative and perioperative mortality was 0%. Median follow up was 8 months.

Conclusions: Initiation of a new VATs lobectomy programme can be safely undertaken and generate excellent results. These results may be further improved once the learning curve has been surmounted.

115 Video Assisted Thoracoscopic (VATS) Thymectomy for Myasthenia Gravis: The Oxford Approach

Authors: S. Sarvananthan; M. Federico; E. Black

Cardiothoracic Surgery Department, Oxford University Hospitals, United Kingdom

Objectives: Thymectomy may form part of the treatment for patients with myasthenia gravis (MG). Worldwide median sternotomy remains the most frequent approach. Minimally invasive techniques are becoming more frequently offered as alternative approach. There are several minimally invasive approaches. Ours is a 3 port right sided VATS hiding all scars in a "bra-strap"line. The objective of this video is to demonstrate our technique of a 3-4 ports right-sided VATS technique.

Methods: Our technique requires three 5mm ports placed on the right side with "bra-strap" alignment. The patient is in a 30 degree tilt, 5mm instruments and CO2 insufflation are used. Latterly no chest drains are used. We compared out results with the preceding 48 months 15 open thymectomies.

Results: In the last 18 months 16 VATS thymectomies were performed Mean age 26.3 ± 6.9 years, 13 (81%) females. Ten 3-ports and six 4-ports. Conversion rate was 0%. The median post-operative length of stay was 4 days (2 to 7) for open group and 3 days (2 to 5) for VATS group (p=0.002). Median drain duration was one day and 0 respectively (p=0.02); median stay in ICU was one day for both groups.

Conclusions: Right VATS thymectomy is safe, feasible and is our standard approach for myasthenia gravis. Additional cosmetic benefits over open surgery are clear although not quantified in this series.

116 Left Atrial Roof. An Alternative Minimal Approach For Mitral Valve Surgery

Authors: G. Cappabianca; N. Gallo; V. Pestrichella; G. Contegiacomo; G. Esposito

Humanitas Gavazzeni Hospital, Italy

Objective: Mitral valve surgery is commonly performed through a left atriotomy at the level of the inter-atrial groove or through a trans-septal approach. Both approaches require full sternotomy and bicaval cannulation. In order to perform mitral surgery through a J-shaped ministernotomy we performed a 4 cm vertical incision of the left atrial roof (LAR) between the SVC and the ascending aorta using a single atrio-caval cannula for the venous return. Because of the proximity of LAR incision line to the aortic root, concomitant aortic valve/root surgery could be performed through the same minimally invasive approach.

Methods: Between 2007 and 2011, 512 patients underwent mitral procedures (460 MR / 52 MS) using LAR approach. A J shaped ministernotomy was performed in 189 patients and 61 of these had concomitant aortic valve/root procedures. A standard sternotomy was performed in 323 patients and 126 of these had concomitant aortic valve/root procedures. Repair rate in patients with mitral regurgitation 398/460 (86.5%). The incidence of isolated posterior, isolated anterior and bileaflet repair were 62%, 9% and 29%. Pulmonary vein RF isolation and external left atrial appendage ligation were performed in 20.3% of patients because of paroxysmal of persistent AF.

Results: In-hospital mortality was 2.3%. An adjunctive pericardial patch to repair the LAR was necessary in 1.9%. Re-exploration for bleeding was 4.8%. Permanent pacemaker implant occurred in 3.1% of patients. Four-year survival was 91±4.2%. In patients undergone mitral repair four-year freedom from MR > 2+ was 97.4%. Four-year AF ablation success rate was 75%.

Conclusions: LAR approach was a safe and effective option to perform mitral valve surgery. The proximity of the LAR incision to the aortic root and the possibility to use a single venous cannula make this approach suitable for minimally invasive mitro-aortic procedures.

117 Mitral Valve Repair Feasibility: Determinants of Successful Repair

Authors: Tine Philipsen; B. Paelinck; I.E. Rodrigus

Antwerp University Hospital, Belgium

Objectives: Current guidelines on mitral valve surgery state that repair is preferred to replacement if feasible, meaning the valve is suitable for repair and the intervention is performed by an experienced surgeon. The intent of this study was to search which factors determined this feasibility for repair.

Methods: All mitral valve procedures performed in our centre between December 2009 and March 2011 were prospectively included. Each patient was given a score determining the surgical feasibility for repair (feasibility score, FS) preoperatively and a renewed score after surgery, ranging from 1 (easy repair) over 2 (moderately difficult) and 3 (difficult) to 4 (no repair). These scores were compared. The factors determining any change in FS were analyzed.

Results: In this period, 145 patients were operated for mitral valve pathology. In 79.7%, the preoperative FS remained the same during the intervention. In 16,1% the FS increased intra-operatively, meaning the intervention was more difficult than planned. In the majority of these cases (73.9%), the mitral regurgitation was due to degenerative disease. The main influencing factors for the increase in FS were multisegmental and bileaflet prolapse, excessive subvalvular calcification, leaflet destruction, papillary muscle rupture and previous mitral repair. In total, 97.2% (N=139) of the procedures were performed as preoperatively planned.

Conclusions: In 79.7% of our mitral valve interventions, preoperative estimation of possible repair can be accurately done by the surgeon, based on data derived from echocardiography en cardiac catheterization. In 16.1% however, the repair was found to be more difficult than expected. By defining the features influencing this finding, a more precise preoperative assessment in terms of repair feasibility can be done. This way, the pitfalls of difficult valve repair can be anticipated and the patient can be adequately informed preoperatively concerning the planned intervention.

118 Concomitant Atrial Fibrillation Therapy with High Intensity Focused Ultrasound: Single Centre Results

Authors: Sanjay Asopa; S. Bazerbashi; M. Dalrymple-Hay

Derriford Hospital, United Kingdom

Objectives: Surgical therapy for atrial fibrillation concomitant to cardiac surgery using epicardial ultrasound technique (Epicor) in a single unit is assessed after a minimal 1 year follow up. To evaluate using 7 day monitoring efficacy of concomitant ablation using a high intensity focused ultrasound.

Methods: Data was collected prospectively from 109 consecutive patients with atrial fibrillation (AF) who underwent concomitant atrial fibrillation surgery. AF ablation was performed after the sternotomy delivering High Intensity Focused Ultrasound (HIFU) circumferentially around the pulmonary veins on the beating heart, before the initiation of bypass. A mitral line was performed with a wand in all cases. All patients received an antiarrythmic agent and warfarin post operatively.

Results: Mean age of the patients was 70 (54-85) yrs. Male: female ratio was (2.3:1). Duration of AF ranged from 6 to 260 (mean 60) months, and was persistent in 45 (41%); and paroxysmal in 30 patients (28%); permanent in 34 (31%). 8 deaths in the follow up period which included 2 early deaths. 7-day Holter tape was performed in 85 (84%) of patients. The overall 7-day Holter tape results demonstrated 48 % of the patients to be in sinus rhythm. 6% had paced rhythm, 3 % had atrial flutter and 40% in atrial fibrillation. On subgroup analysis 3/26 patients with PAF continued to be in AF, with 2 patients in paced rhythm. 12/33 patients with persistent AF continued to be in AF and 20/26 patients with permanent AF were in AF on the 7 day Holter tape monitoring.

Conclusions: This is the first report of results of patients undergoing concomitant AF ablation with Epicor device monitored using 7 day Holter tapes. Our results suggest that concomitant AF ablation for paroxysmal AF is 81% success rate. In patients with persistent AF we had success in around 58%.

119 Pressure Reflection in the Pulmonary Circulation in Patients with Severe Mitral Regurgitation is Reduced After Surgery but Indicates Adverse Postoperative Outcome

Authors: C.J. Malm; P. Nivedahl; A. Jeppson; H. Scherstén; S.E. Ricksten; L. Nguyen; O. Bech Hanseen

Institute of Medicine at Sahlgrenska Academy, University Hospital, Sweden

Objectives: Pulmonary hypertension (PH) is a frequent finding in patients with severe mitral valve disease. PH is caused by increased pulmonary venous pressure, increased pulmonary vascular resistance (PVR) or both. A new echocardiography (ECHO) method can identify increased PVR by assessing pressure reflection (PR) in the pulmonary circulation. We studied the short-term effect of mitral valve (MV) surgery on both PH and PR. We hypothesised that patients with pressure reflection (PR) but without severe PH have increased morbidity following surgery compared with patients without PR.

Methods: 103 patients undergoing MV surgery were studied retrospectively. We selected three variables related to PR: the interval from valve opening to peak velocity in the pulmonary artery (PA), the interval between PA peak velocity and peak tricuspid velocity and the right ventricular pressure increase after peak velocity in the PA. The patients were divided into three groups: 1: patients without PR; 2a: Patients with PR and PA systolic pressure (PASP) ≤60 mmHg and 2b: Patients with PR and PASP>60 mmHg.

Results: There were no differences between groups in age, ejection fraction, creatinine and proportions with concomitant coronary grafting. Postoperative ECHO data was available in 74 patients. At the postoperative ECHO patients with preoperative PR had increased cardiac output, decreased PA mean pressure and decreased PVR. PR was absent in 55% of these patients postoperatively. Mortality in group 1 was 0% compared with 11% in groups 2a+2b (p=??). There was no difference in Euroscore between Group 1 and Group 2a but significant higher ICU admission score, number of days with vasoactive drugs and hours in the ICU for patients in group 2a compared with group 1.

	Group 1 (n=27)			*Group 2 (n=46)*		
	Preoperative	*Postoperative*	*P-value*	*Preoperative*	*Postoperative*	*P-value*
CO (l/min)	4.6±1.1	6.2±1.8	0.0001	5.9±2.0	6.7±2.1	0.02
RVEF (%)	35±9.6	37±9.8	0.32	42±7.6	38±8.1	0.02
PASP (mmHg)	53±14	36±6	0.0001	33±7	32±7	0.35
PAMP (mmHg)	33±9	22±4	0.0001	20±5	20±5	0.35
TPR (WU)	7.9±3.6	3.8±1.3	0.0001	3.7±1.3	3.2±1.3	0.008

Conclusions: Preoperative reversible vasoconstriction is the most important contributor to PR. PR in the pulmonary circulation in the absence of severe PH is associated with increased morbidity not identified by Euroscore data.

120 Is Lone Pulmonary Vein Isolation Inferior to Modified Maze for Concomitant Surgical Correction of AF? A Single-Surgeon Retrospective study

Authors: David Bleetman; A. Lingham; M. Khan; S. Shanmuganathan; R. Deshpande

King's College Hospital, United Kingdom

Objectives: Surgical left-sided modified maze (MM) radiofrequency ablation is successful in cardioverting atrial fibrillation (AF) but is not routinely undertaken for concomitant procedures that do not require left atrial access. Isolated pulmonary vein isolation (PVI) radiofrequency ablation is possible in these scenarios, although it is considered inferior to full or modified maze. We compared outcomes between MM and PVI patients to challenge this opinion.

Methods: We retrospectively identified patients undergoing concomitant MM and PVI between May 2007 and January 2011 from our surgical database. Information was scrutinized from patient telephone interviews, general practice notes and electronic patient record data.

Results: We identified 53 patients over 44 months. During this time there were 8 deaths. The remaining patients had either paroxysmal (PaAF) (50%) or persistent (PeAF) (50%) AF. Mean age was 66 years (range 30-82) with a male preponderance of 57.8%.

MM was carried out in all mitral valve surgeries (n=23). The PVI operations (n=22) were concomitant with aortic valve surgery (12), CABG (9) and a tricuspid valve operation.

The comparative cardioversion rates of PVI and MM for PaAF and PeAF are shown in table 1.

Table 1

	N	*Sex (Male)*	*Age (Years)*	*Time to follow up (f/u) (Months)*	*% Patients with PaAF*	*% PaAF patients in SR at f/u*	*% PeAF patients in SR at f/u*
MM	23	43%	63 (+/-15)	17 (+/-8)	47.8%	82%	25%
PVI	22	73%	68 (+/-11)	22 (+/-11)	54.5%	100%	40%

Multivariate logistic regression analysis demonstrated no inferiority of PVI versus MM.

Adverse factors for successful cardioversion were age (OR 0.3 per year) ($p<0.05$) and PeAF (OR 12) ($p<0.05$).

Conclusions: In our limited series, we have demonstrated that PVI can achieve good medium term surgical correction of AF. PVI should not be viewed as an alternative to modified or full-maze but we would encourage surgeons to consider PVI as a worthwhile strategy for intra-operative cardioversion whenever feasible.

121 Indications and Outcomes Following Redo Tricuspid Valve Surgery

Authors: Reubendra Jeganathan[1] S. Armstrong[2] T. David[2]

1 Royal Victoria Hospital, United Kingdom; 2 Toronto General Hospital, Canada.

Objectives: Tricuspid valve surgery is reportedly associated with increased operative mortality and morbidity. Outcomes following tricuspid valve re-operation have not been published before. This study examines our 32-year experience in this cohort of patients.

Methods: Between May 1979 and Jan 2011, a total of 68 patients who had previous tricuspid valve surgery had re-operations. The previous surgery included 49 repairs and 19 replacements. The mean age was 55 years (19-75) with 83% of the surgery performed electively. Primary indication for redo tricuspid valve surgery included the following pathologies: 18 functional, 17 rheumatic, 13 congenital, 13 prosthesis dysfunction and 7 other. Concomitant cardiac procedures ware also performed in 62% of patients. Follow-up was available in 88% of patients, with a mean follow-up of 87 months (5-248).

Results: Re-repair of the tricuspid valve was feasible in 26 patients (16 functional, 7 rheumatic, 1 congenital and 2 other). The remaining patients required tricuspid valve replacement. In-hospital mortality occurred in 9 patients. Post-operative complications included 7 reoperations for bleeding, 11 low cardiac output syndrome, 5 renal failure requiring dialysis, 3 stroke and 13 pacemaker implantation. There were 18 late deaths and heart failure was the most common cause of death. Late complications included 3 re-operations, 2 anticoagulant-related hemorrhages, 1 stroke and 1 infective endocarditis. The remaining survivors had a mean NYHA class of 1.7, compared to a pre-operative NYHA of 3.3.

Conclusions: Redo tricuspid valve surgery is associated with high operative mortality and morbidity, largely because of the patients' risk profile. Re-repair of the tricuspid valve is feasible in the majority of patients with functional tricuspid valve pathology, whilst the majority of patients with underlying organic pathology required a valve replacement.

122 Totally Thoracoscopic Surgical Ablation: A Single UK Unit Experience

Authors: D. McGowan; M. Baghai; J.A.J. Hyde; M.E. Lewis

Royal Sussex County Hospital, United Kingdom

Objectives: The use of an entirely thoracoscopic radiofrequency (RF) approach for ablation to treat atrial fibrillation (AF) and amputate the left atrial appendage (LAA), is an emerging technique. This study details the early outcomes of a VATS AF ablation (RF) programme in a UK Teaching Hospital, the first of its kind in the country.

Method: All cases were performed as a 2 consultant procedure. With the patient in the supine position, surgery was performed through 3 ports bilaterally (5, 5 & 10mm). Pulmonary vein isolation (PVI) ablation of all positive ganglionic plexi and an LA roof lesion was performed in all patients. The LAA was amputated flush with the atrium. All patients received a post-operative ECG in recovery and at 24 hours. Patients were usually discharged on the 1st or 2nd postoperative day. All patients were followed up at protocol driven intervals and had a 12-lead ECG as well as 24-hour ECG and echocardiography in the majority (72%).

Results: N= 30 patients (19 paroxysmal AF, 11 persistent AF). Surgery was abandoned intraoperatively in 1 patient (morbid obesity & ventilatory issues). Freedom from AF at the following time points was: At discharge 26/ 29 (89.7%) patients. At first follow-up (2 months) 26 (89.7%). 3 patients (10.3%) had documented episodes of AF on 24 hr monitoring at median follow up of 297 days. Four patients (13.8%) had adverse events 2 (6.9%) wound infection and 2 patients (6.9%) required conversion to median sternotomy (these were in the first 5 patients). There were no deaths or thromboembolic events. No patient required permanent pacing.

C onclusions: VATS AF ablation surgery is a safe and successful procedure. We describe a success rate of after a median follow-up of 297 days. Many of these patients were referred following numerous failed attempts at medical and interventional treatments for AF. On the basis of this data we are about to commence a randomised controlled trial of VATS ablation vs. catheter ablation.

123 Same Day Admission; An Improved Cardiothoracic Surgical Patient Pathway

Authors: Palanikumar Saravanan; C.A. Humphries; A. Knowles; B. McAlea; C. Rozario

Lancashire Cardiac Centre, Victoria Hospital, United Kingdom

Objectives: Same day admission (SDA) for surgery has few advocates in UK cardiothoracic surgical centres. Over an 18 month period we initiated a comprehensive review and redesign of pre-operative assessment services through to SDA. We discuss the advantages and problems encountered in developing the service.

Methods: Service development included a team comprising; nurse practitioner, cardiac anaesthetists, cardiac liaison nurses and ward staff. Pathways developed included clinic coordination of referring hospital results with secretarial support and single day sequential investigations. Improved scheduling of surgical and anaesthetic reviews reduced need for pre-operative visits. Patients were offered the SDA option with a free taxi service from home. Those accepting were given pre-SDA protocols and on the day of surgery were processed in a segregated ward area.

Results: Elective patients increasingly indicated a preference for SDA. From a slow uptake this has risen to over 70% of elective patients representing a rise from 24% in May to 47% in October of all surgical patients (cardiac and thoracic) with no cancellations. Challenges faced included; altered work patterns (secretaries, anaesthetists and ward staff), changes in practices and procedures (pre-op screening and preparation) and securing designated facilities (out-patient clinics, ward, staff and transport). Benefits included; reduced length of hospital stay, cost savings and improved patient satisfaction. This has achieved an annual cost reduction of £140,000 against closure of four beds.

Conclusions: SDA is a safe, effective, patient centred and cost containing measure in cardiothoracic surgery. It requires considerable re-drawing of work patterns in multiple areas. Nevertheless this has illustrated an optimum patient pathway with tangible benefits.

124 Improving the Efficiency of Discharge, Following Fast-Track Cardiac Surgery

Authors: J.M. Ali; N. Moorjani

Papworth Hospital, United Kingdom

Objectives: Delayed discharge after cardiac surgery has significant cost and service implications, important in the current financial climate. The aim of this study was to improve efficiency of our fast-track recovery programme by examining reasons for delayed discharge beyond day 5 and identifying strategies to reduce hospital length of stay (HLOS).

Methods: We prospectively audited 100 consecutive patients undergoing cardiac surgery who fulfilled fast-track recovery criteria. Review of the patient's casenotes and critical care records was conducted to elucidate the reasons for delayed discharge.

Results: The mean age of the patients was 72+/-9.1 years with a mean logistic EuroSCORE of 6.29+/-0.69. Twenty-six were urgent cases. The mean HLOS was 7.34+/-3.1 days, with only 31% of patients being discharged on day 5. Those patients not discharged on day 5 had a mean HLOS 8.45 +/-3.5 days. Unavoidable delays included AF (30%), mobility (12%), chest infection (7%), renal failure (5%), permanent pacemaker insertion (2%). 23% of patients though, had an avoidable delay of an average of 1.96+/-0.23 days, such as delayed referral for rehabilitation, home situation and reduced healthcare services over the weekend. Extrapolating over a 12 month period, 494 hospital days and £197,600 could be saved.

Conclusions: Our data confirms that fast-track patient discharges can be optimised with changes in practice reducing unavoidable delays. To improve efficiency we recommend more frequent consultant wardrounds; implementation of clinical protocols for AF treatment; referrals for rehabilitation being anticipated earlier, and made on discharge from critical care; increased availability of physiotherapists and occupational therapists at weekends; improved documentation of weekend plans. These changes will facilitate altering the mindset of healthcare professionals to drive the goal of day 5 discharge for appropriate patients, which will contribute to hospital cost saving and service improvement.

125 Prospective Clinical Audit of Delays in Patient Discharge Following Elective Cardiac Surgery

Authors: Philemon Gukop; A. Kourliouros; E.E.J. Smith

St George's Hospital NHS Trust London, United Kingdom

Objectives: Elective cardiac surgery in our unit is protocol driven; patients are optimised in a pre-assessment clinic prior to elective admission for surgery. The protocol suggested a 5day postoperative hospital stay. Delays in patient discharge constitute significant economic and strategic burden. This often results in subsequent elective patients not being admitted for surgery, with adverse effect on the waiting list and quality of service. We audited our practice with the aim of identifying reasons for delayed discharges and to recommend and implement corrective measures.

Method: Prospective data was collected on 100 consecutive elective cardiac surgery patients. Data was analysed and presented, recommendations implemented and a re-audit of 50 patients 6months later.

Results: 100 patients were included, mean age of 60 years. 53% were not discharged on day 5.Mean age for discharges on day 5 was 56 years against 64years for patients who failed discharge. Male: female ratio of audit group is 2.2. Male: female ratio of patients who fail discharge was 1.8. 61 patients had CABG of which twenty three (37.7%) failed discharge, 14 patients had multiple procedures of which 11(78.7%) failed discharge and 25 patients had single valve surgery of which 16(64%) patients failed discharge. Reasons for failed discharge were leg wounds 8(15.0%), Delayed echocardiogram 7(13.2%), Arrhythmia 20(37.7%), delayed rehabilitation beds for patient transfer15 (28.3%), sub therapeutic INR for warfarin 2(3.8%), renal failure1 (1.9%), Neurologic deficit 2 (3.8%). 14 patients had multiple procedure of which 11(78.6%) failed discharge on day 5. With prompt management of arrhythmia, proactive securing of rehabilitation beds, echocardiogram services at the weekend, and less invasive technique of conduit harvesting, discharges on day 5 improved to 80%.

Conclusions: Arrhythmia, rehabilitation beds, age, multiple procedures and wound problems predispose to delayed discharges.

126 Excision of Calcium Bar From the Posterior Annulus/Reconstruction with Bovine Percardial Patch in a Patient with Mitral Annular Calcification (MAC)

Authors: Hunaid Vohra; L. DeKerchove; D. Glineur; P. Norholmme; G. ElKhoury

Saint Luc University Hospital, Belgium

We show a film of a 62 year old man with extensive mitral annular calcification (MAC) in the posterior annulus. The calcium bar was excised in one piece and the remaining defect was repaired with a bovine pericardial patch. Also, a posterior annuloplasty was performed with a pericardial band.

127 Reconstruction of A2/A3 with Bovine Pericardial Patch in a Patient with Anterior Mitral Valve Leaflet Endocarditis

Authors: Hunaid Vohra; L. DeKerchove; D. Glineur; P. Norholmme; G. ElKhoury

Saint Luc University Hospital, Belgium

We show a film of reconstruction of the A2 and A3 scallops of the mitral valve which were destroyed by acute endocarditis. A bovine pericardial patch was used and the technique is elegantly shown and described.

128 Excision of a right ventricular outflow tract sarcoma

Authors: Massimo Caputo[1] D. Mukherjee[1] P. de Siena[1] N. Manghat[1] M. Turner[2]

1 Bristol Royal Hospital for Children, United Kingdom; 2 Bristol Heart Institute, United Kingdom

A 68 year old man, previously asymptomatic, presented with profoundly dyspnoeic (NYHA class 4), dizziness and nausea. He had a background of hypertension and a sarcoma of the right hand which had been amputated in 2007. Upon physical examination, he had a respiratory rate of 30/min, with significant peripheral oedema and an elevated jugular venous pulse. Coronary angiography was unremarkable. Echocardiography confirmed well-preserved left ventricular systolic function, but revealed significantly dilated right heart chambers, and severe tricuspid regurgitation in the presence of a structurally normal tricuspid valve. There appeared to be a mass obstructing the right ventricular outflow tract (RVOT). A computerised tomography scan of his chest revealed a probable high-grade tumour with a maximum diameter of 5.1cm and an undeterminable anchor point. Multidisciplinary team discussion took place within 48 hours of his transfer, and the decision for urgent surgical resection was taken. Median sternotomy and pericardiotomy revealed a massively enlarged right heart. Under cardiopulmonary bypass, the right atrium was opened allowing visualisation and initial dissection of the mass through the tricuspid valve. The mass was tethered to the ventricular septum and involved a papillary muscle of the tricuspid valve. Hence a further longitudinal incision was made along the RVOT, facilitating final dissection of the mass, which was extracted from the heart en masse with well-demarcated boundaries. The damaged tricuspid papillary muscle was repaired and re-implanted, and the RVOT closed using a porcine pericardial patch. Post-operative TOE showed restored right ventricular function, with a dramatic reduction in right atrial pressure (14mmHg from 30mmHg preoperatively). Histology confirmed it to be a metastasis from the previous limb sarcoma. The patient was discharged home three weeks post-admission, and at 6-month follow-up remains asymptomatic with a normal level of activity.

129 Preoperative Renal Dysfunction in Heart Transplant Recipients - Time for Change in Practice?

Authors: S. Hosmane; J. Ketheswaran; R. Venkateswaran; S. Williams; P. Waterworth

University Hospital of South Manchester, United Kingdom

Objectives: The national protocol for assessment of cardiothoracic transplant patients considers chronic renal impairment with glomerular filtration rate (GFR) <50ml/min, unless candidate for combined renal transplant, as a relative contraindication for heart transplantation.

Methods: The estimated glomerular filtration rate (eGFR) was calculated using Cockroft-Gault formula. Between 1996 and 2011, 253 isolated adult heart transplantations were performed in our institution. 216 recipients had eGFR >50ml/min (group 1) while 37 patients' eGFR was <50ml/min (group 2). The decision to list the patients for transplantation were taken after multidisciplinary team meetings.

Results: The mean donor age in group 1 and 2 were 34.1±11.7 and 35.8±14.1 respectively. The mean ischemic times (min) were similar in both groups (group 1 = 218.46±48.9 and group 2 = 223.49±38.0, p=0.55). The recipients in group 1 were significantly younger than in group 2 (46.4±12.0 & 56.7±7.9, p<0.05). The mean eGFR in group 1 was 84.3±30.5 and in group 2 was 39.3±7.7 (p<0.05). Forty four (20.3%) patients in group 1 and 13 (35.1%) patients in group 2 required short term renal support in postoperative period which was statistically significant (p<0.05). The 5 year survival in group 1 and group 2 were 77.1% and 74.7% respectively. The 10 year survival was 67.2% in group 1 which was comparable with group 2 (56.9%).

Conclusions: We conclude that patients with eGFR<50ml/min preoperatively are likely to need short term support postoperatively, however it does not adversely affect the medium and long term survival after heart transplantation. There is a potential to modify the protocol to decrease the lower limit of eGFR.

130 Outcome of Lung Transplantation in Those with a Prolonged Intensive Care Stay

Authors: A.K. Bose; H. Muse; K. Morley; J.H. Dark; S.C. Clark

Freeman Hospital, United Kingdom

Objective: To ascertain the causation and long term outcome of lung transplant patients with intensive care stays greater than 30 days.

Method: A retrospective analysis of 270 adult single and bilateral lung transplants between January 2004 and 31 December 2010. We identified those patients who had post operative continuous intensive care stays (ICU) of greater than 30 days. These patients were studied to analyse ischaemic time, ventilation time, causation for prolonged stay, mortality, cause of death and in surviving patients the number of rejection episodes and post operative FEV1.

Results: Of 270 lung transplants 70% of patients were alive. A total of 12 of 270 lung transplant recipients (4.4%) had ICU stay greater than 30 days. The mean ischaemic time was 327 minutes (range 228 - 484). Mean stay on ICU was 66 days, range 31-300 with a mean ventilation time of 51 days (range 31 -300). Renal replacement therapy with continuous veno-venous haemo-filtration was required in 75%. Primary organ dysfunction occurred in 3 patients. Two patients were supported with a lung assist device (NovoLung) and one supported with ECMO. Vascular anastomotic complications were identified in two of the patients. Acute rejection was confirmed in one recipient, three were augmented for rejection. Seven of 12 long term ICU patients 58% suffered from acute infective complications. There was confirmed CMV pnuemonitis in 2, and profund sepsis in 2. Bronchial dehiscence occurred in one case with profound sepsis. The survival rate for patients staying more than 30 days in ICU was 58% with seven patients remaining alive. In 7 patients who survived a prolonged ICU stay the rate of rejection requiring treatment was 15% at 6 months.

Conclusions: The number of patients requiring an ICU stay greater than 30 days is small after pulmonary transplantation (4.4%). Prolonged ICU stay was associated with a high mortality rate (42%). Episodes of acute rejection were not more frequent in survivors.

131 Enhanced Recovery in Cardiac Surgery - Effects on Postoperative Outcome

Authors: C. Garratt[2] S. Chaubey[1] E. Fawzy[2] M. Ghosh-Dastidar[1] R. Guha[2] S. Ward[2] J. Desai[1] G. Kunst[2]

1 King's College Hospital NHS Foundation Trust / Department of Cardiothoracic Surgery, United Kingdom; 2 King's College Hospital NHS Foundation Trust / Department of Anaesthetics, United Kingdom

Objectives: The enhanced recovery protocol is based on evidence for each part of this multimodal approach and has been shown to improve postoperative outcome and length of stay after abdominal surgery (1). Very little is known about enhanced recovery in cardiac surgery (ERACS). We conducted an audit to evaluate postoperative outcome with ERACS.

Methods: Our ERACS protocol included preoperative carbohydrate drinks and gabapentin. Postoperatively patients in the ERACS group received early oral analgesia, early food and early mobilisation. We prospectively investigated outcome variables of 52 consecutive patients without (control) and 53 consecutive patients with ERACS until the third postoperative day (audit project number AP1161-01). Data was analysed using the t-test, Chi-square test and multilevel model fitting.

Results: Patients in the two study groups were similar with respect to preoperative variables. Postoperatively the ERACS group had significantly less morphine use, and received significantly more codein and tramadol. Despite this, the ERACS group scored significantly better on pain scores when compared with the control group. Whereas postoperative oral intake of liquids was similar in both groups, significantly more ERACS patients were able to have solid food earlier. Postoperative mobilisation was similar in both study groups. The control group showed a postoperative decline in their creatinine clearance which was not observed in the ERACS group.

Conclusions: Our results of improved early postoperative oral intake, improved postoperative pain control and improved postoperative renal function demonstrate that ERACS has the potential to be beneficial for patients undergoing cardiac surgery. In the future results from randomised controlled studies investigating the impact of ERACS on postoperative outcome will be of value. Reference. (1) K Lassen et al. Arch Surg 144:961-9, 2009.

132 Is it Time to Adopt Standardized Concentrations of Vasoactive Drugs in Adult Cardiothoracic Intensive Care Nationally? - A National Survey

Authors: Prakash Nanjaiah

Leicester Glenfield Hospital, United Kingdom

Objectives: About 10 % hospital admissions in UK result in some sort of adverse event, most of them due to drug error / medication incidents. These are escalated to National Patient Safety Agency (NPSA), which investigates and deals with them effectively. However its survey showed that there is gross under reporting. It is more concerning world wide than in the UK. The reasons could be variations in concentrations, diluents, compatibility with other infusions, inappropriate labelling etc. Standardisation of the drug concentrations could reduces error rates, improves safety of healthcare. There have been no national guidelines so far. AIM To perform a national survey of vasoactive drug concentrations / dilutions used in adult cardiothoracic ICUs (CICUs) throughout UK and to assess variation in practice.

Method: A Telephonic questionnaire was used to seek information on commonly used vasoactive drug infusions in CICUs .The data was entered into spread sheet for analysis with one entry per unit.

Results: Data from 35 / 41 units - 85.3% response rate- was received. There were 37 presentations for 9 drugs, which showed wide spectrum of practice with variations. With some drugs - almost universal use of one concentration of infusion was reported.In others the variations appear more marked. 25% CICUs were cross covered with general ITU intensivists. Data on drug errors was difficult to elicit.

Conclusions: There are significant national variations in drug concentrations in ICUs increasing the probability of lethal drug errors.In most cases standardization is feasible and will increase health care safety - reduce error rates. There is a suggestion that if a particular concentration is used by > 70% of units, then that should be adopted as national standard. In other cases consensus is needed.

133 CICU Re-Admission After Cardiac Surgery: Improving Outcome?

Authors: Yaseen Moussa; A. Mustafa; S. Lakshmanan; A. Gore; R. Sahajanandan; H. Luckraz

New Cross Hospital, United Kingdom

Objective: CICU re-admission is one of the qualities of care markers and has been reported at 4 -14% following cardiac surgery. Mortality for these patients is high at 17%.

Method:: We assessed our experience with CICU re-admission from 2005 to 2011. Patient episodes were grouped into two eras (2005-2008, n= 63 & 2008-2011, n=76) to coincide with the establishment of continuity of care on the ward by the nurse practitioner.

Results: 138 patients (out of 6297) were identified to have been re-admitted to CICU after cardiac surgery within the same hospital admission. Data was only available for 133 patients who contributed 139 episodes of re-admission (2.2%). There were no significant differences between the two groups in terms of age, pre-op urgency for surgery & Euroscore. Overall, the reasons for re-admissions were: Cardiac - 20%, Pulmonary 37%, Renal-12%, GI - 10%, sternal - 9% & other - 12%. Patient discharged from CICU on Wednesdays and Fridays (greater need for CICU beds on these days) were more likely to be re-admitted. Post-operatively, the patients in the two groups had similar 1st CICU stay, initial ward stay and 2nd CICU stay. Interestingly, more patients were re-admitted to CICU during the latter era (55% v/s 45%) but the survival was significantly better during that period (4% v/s 18%).

Conclusions: CICU re-admission remains low in our unit. Survival after CICU re-admission is greatly improved may be reflecting earlier referral to CICU by the ward nurse practitioner.

134 Aprotinin Significantly Reduces Re-Exploration for Bleeding with no Increased Risk of Mortality: Results from a Mixed Treatment Neta-Analysis

Authors: E.L. Senanayake[1] N.J. Howell[1] N. Freemantle[2] D. Pagano[1]

1 University Hospitals Birmingham, United Kingdom; 2 University College London, United Kingdom

Objective: Meta-analysis of almost 100 randomised placebo controlled trials demonstrated both the efficacy and safety of Aprotinin. Following a number of highly publicised retrospective studies and the early stopping of the BART trial, Aprotinin was withdrawn. We conducted a new mixed treatment meta-analysis including the BART trial, on the safety and efficacy of Aprotinin in cardiac surgery.

Methods: We conducted a mixed treatment 'network' meta-analysis, estimating the effects of Aprotinin and alternative agents to reduce blood loss during surgery. We implemented a combination of direct and indirect evidence in mixed treatment comparisons and estimated the relative effect for different agents on the outcome of all cause mortality and return to theatre for bleeding. We then conducted a supportive analysis of the effects of different agents using only the directly randomised trials.

Results: Eighty eight trials were examined randomising a total of 15,528 subjects to one of the 3 anti-fibrinolytic agents Aprotinin, Tranexamic acid, Aminocaproic acid or control. Mixed treatment analysis demonstrated no difference in mortality between placebo and any of the anti-fibrinolytic agents. Of these 88 trials, 17 compared Aprotinin to Tranexamic acid, 5 compared Tranexamic acid to å-Aminocaproic acid and 6 compared Aprotinin to å-Aminocaproic acid and analysis of this group demonstrated no difference in mortality between treatment allocations. All 3 agents were shown to be superior to placebo in reducing re-exploration for bleeding, with Aprotinin numerically superior to the other 2 agents: Aprotinin OR 2.6 (95%CI 1.9-3.7); Tranexamic acid OR 1.79 (95%CI 1.2-2.9) and å-Aminocaproic acid OR 2.4 (95%CI 1.3-6.6).

Conclusions: This mixed treatment meta-analysis demonstrates no increased risk of mortality with Aprotinin over other anti-fibrinolytic agents. All 3 agents were shown to be superior to placebo in reducing re-exploration for bleeding following adult cardiac surgery.

135 Red Blood Cell Transfusion in Cardiac Surgical Patients: A Systematic Review of Observational Studies and Randomised Controlled Trials

Authors: Nishith Patel; V. Avlonitis; G.D. Angelini; G.J. Murphy

Bristol Heart Institute, United Kingdom

Objectives: Numerous observational studies have demonstrated adverse outcomes associated with red blood cell (RBC) transfusion in patients undergoing cardiac surgery. Recent randomised controlled trials (RCTs) however provide conflicting results. The objective of this meta-analysis was to determine the impact of RBC transfusion on adverse outcomes and to identify reasons for the discreprancy between observational studies and RCTs.

Methods: Pubmed, Embase, ICCTO and IIHMCS databases were systematically searched to identify all observational studies and RCTs examining the impact of RBC transfusion on adverse outcomes in adult cardiac surgical patients published between 1990 and 2011. Data were stratified by study design and pooled using random effects models.

Results: Data from 41 observational studies and 2 RCTs were included. In observational studies, RBC transfusion was associated with significant increases in mortality, infection, and adverse cardiac, renal, pulmonary and neurological outcomes. In RCTs, RBC transfusion was not associated with increases in any adverse outcome. The median number of RBC units administered was 2 (IQR 1-3) in these RCTs. Subgroup analyses of observational studies stratified according to number of units administered reveals only a mild increase in adverse outcomes in patients receiving 1-2 RBC units (OR: 1.77, 95%CI: 1.38-2.77), but much greater and significant increases in patients receiving 3-6 RBC units (OR: 2.95, 95% CI: 2.06 - 4.22) and greater than 6 units (OR: 7.12, 95% CI: 3.93 - 12.90).

	Observational studies			*Randomised Controlled Trials*		
	No of studies	*OR (95% CI)*	*P-value*	*No of studies*	*OR (95% CI)*	*P-value*
Mortality	11	2.32 (1.73-3.10)	<0.001	2	0.77 (0.39-1.50)	0.44
Infection	6	2.77 (1.86-4.11)	<0.001	2	1.44 (0.55-4.33)	0.41
Cardiac	5	1.53 (1.12-2.08)	0.008	2	1.37 (0.69-2.34)	0.31
Renal	11	2.22 (1.59-3.11)	<0.001	-	-	-
Pulmonary	5	1.74 (1.21-2.51)	0.003	2	0.91 0.67 (0.56-1.52)	
Neurological	3	1.37 (1.31-1.44)	<0.001	2	1.16 0.71 (0.50-2.69)	

Conclusions: RBC transfusion is associated with adverse outcomes, although this relationship is stronger with increasing RBC units. Current RCTs are limited by the small number of RBC units administered which does not reflect the "real world" scenario as reflected in observational studies. RCTs evaluating the impact of quantity of RBC units on adverse outcomes are required.

136 Assessment of Platelet Dysfunction Following Cardiac and Complex Aortic Surgery Using the Multiplate™ Aggregometer - A Pilot Study

Authors: Roofa Mushtaq[1] S. Paranjothy[2] M. Shaw[2] S. Agarwal[2]

1 University Hospitals Aintree, United Kingdom; 2 Liverpool Heart and Chest Hospital, United Kingdom

Objectives: We conducted a pilot study using the Multiplate™ aggregometer to detect differences in the amount of platelet dysfunction following cardiac and aortic surgical procedures employing Off Pump method, standard cardiopulmonary bypass (CPB), cardiopulmonary bypass with deep hypothermic cardiac arrest (DHCA) and left heart bypass (LHB) techniques.

Methods: 10 patients were included in each of the groups as described above. All patients had full blood count, clotting and multiplate™ TRAP tests performed on induction of anaesthesia, 30 minutes after initiation of CPB, 10 minutes after administration of protamine and 24 hours after admission to ICU. Patients undergoing Off Pump surgery had tests performed on induction of anaesthesia, 10 minutes after protamine administration and 24 hours after admission to ICU. Patients undergoing DHCA had tests performed prior to the initiation of DHCA and post DHCA in addition to above times. The area under curve of TRAP test was used to assess overall platelet activity.

Results: The TRAP test area under curve - measure of platelet activity values were recorded and analysed.Statistical analysis was done using ANOVA for intra group analysis of area under curve of TRAP tests at above mentioned time points during and after surgery. The P value of mean TRAP test area under curve for Off Pump (0.62) and LHB Group (0.42) was not statistically significant whereas the P value for standard CPB group (0.02) was significant and P value for CPB with DHCA group was statistically highly significant (<0.001).

Conclusions: Our results show that whilst LHB reduces platelet function, the amount of platelet dysfunction seen is less than that in standard CPB with or without DHCA. Off Pump shows insignificant effects on platelet function while surgery involving cardiopulmonary bypass and DHCA show the greatest amount of platelet dysfunction.

137 Scheduling for Cardiac Surgery - Do We Really Need to Delay Surgery for Clopidogrel Cessation?

Authors: Ishtiaq Ahmed; S. Asopa; M. Hasan; S. Hunter

James Cook University Hospital, United Kingdom

Objectives: Optimal timing of clopidogrel cessation prior to coronary artery bypass grafting (CABG) is debatable. European guidelines recommend stopping clopidogrel for a minimum 5 days prior to surgery. However this is at the expense of an increase in the risk of MI of 1% and also bed occupancy of patients awaiting surgery. We compared the bleeding outcomes of patients who had CABG within 5 days of surgery (early surgery) with those that had cessation of clopidogrel for over 5 days (late surgery).

Methods: This was a retrospective analysis of 109 patients who had in patient CABG after non ST elevation myocardial infarction (NSTEMI).

Results: 109 patients were analysed. 20 patients had CABG within 5 days of clopidogrel cessation and 89 has CABG after cessation of clopidogrel for over 5 days. Euroscore was not significantly different in these groups. There was no significant difference in blood loss at 24 hours (mean 414ml Vs 547ml). Blood product use was slightly higher in the early surgery group (blood 0.4 Vs 0.2 units, FFP 0.36 Vs 0.2 units, Platelets 0.09 Vs 0 units) (p=ns). In addition there were no re-explorations for bleeding in the early surgery group.

Conclusions: Platelet inhibition by clopidogrel is known to be variable. This study shows that by close collaboration with intensivists, judicious use of blood products and meticulous surgical technique, early surgery can be safely performed, hence reducing the time these patients occupy a bed prior to surgery, enabling better resource allocation. In addition with the introduction of platelet mapping technology, we aim to tailor surgery scheduling according to patients' platelet responsiveness.

138 Prospective Comparison of Quality of Life in Post Coronary Artery Bypass Grafts Versus Percutaneous Coronary Intervention in Patients from Wales

Authors: Libby Nolan; V. Meredith; G. Fabb; A. Syed; A. Zaidi; S. Dorman

Morriston Hospital, United Kingdom

Objectives: To compare and examine the expected benefits, complications and quality of life (QOL) 6 years and 14 years PCI (Bare metal stent (BMS)-14 years/ Drug Eluting Stent (DES)-6yrs) and first time CABG. Design: Retrospective and comparative study.

Methods: Sequential selection of 200 patients from a PATS database. Four groups of 50 participants: CABG & PCI 1997, and CABG & PCI 2006. An information letter was sent by post to each participant followed by a telephone interview using the Health Related Quality of Life (HRQL EQ-5D) questionnaire and Seattle angina questionnaire.

Results: Of the 200 participants: 69 (35%) were interviewed, 54 (27%) were deceased, 8 (4%) declined to be interviewed the remainder were uncontactable. BOTH 1997 & 2006 CABG PCI Number of Participants 37 32 Total deceased 28 (14%) 24 (12%) Further PCI 1 (3%) 4 (12%) Further /awaiting CABG 0 2 (6%) No Chest pain 28 (75%) 16 (50%) QOL=excellent/v good 22 (57%) 10(32%).

Conclusions: Participants experienced less angina and higher quality of life scores after CABG than PCI. For further exploration and further study it was noted that patients in the PCI group expected to experience angina whereas those in the CABG group expected to be painfree.

139 Guidelines for Withdrawal of Ventricular Assist Device Support

Authors: N. Wrightson; S.S. Clark; C. Regnard; S. Louw

Freeman Hospital, Newcastle, United Kingdom

Objectives: Advanced heart failure is one of the most common causes of admission to hospital. Patients may be treated with cardiac transplantation but, due to an unprecedented shortage of donor organs, some now receive ventricular assist devices (VADs) - mechanical pumps implanted alongside the heart to augment cardiac output. Patients may be implanted as rescue therapy, for long term heart failure management or as a bridge to transplantation. Some patients now reach end of life with a VAD in situ, either due to device related complications (stroke, infection) or through the development of terminal intercurrent disease such as cancer.

Methods: To develop guidelines for the withdrawal of VAD therapy at end of life.

Results: Scenarios will be presented to illustrate a guidelines algorithm we have developed for management of these cases, for example a patient after massive stroke with a device in situ, and a patient in a hospice setting with terminal cancer. Decision frameworks for withdrawal will be described, underpinned by the Mental Capacity Act 2005. Due to the patients underlying cardiac output, death will not necessarily immediately follow switching off the device and this should be anticipated and the expectation managed. All devices have in built alarms to warn of device malfunction but these will cause much disruption at end of life. Device specific management with the help of relevant specialists is crucial to avoid distress. Use of best interests meetings, independent mental capacity advocates and advance care planning are encouraged within our framework.

Conclusions: With increasing numbers of devices implanted in the UK, the issue of end of life care in VAD patients will challenge palliative care teams. Expectations must be managed and knowledge of device alarm systems is crucial to avoid distress at end of life. Advance care plans, advocacy and multidisciplinary working are strongly recommended.

140 Prophylaxis Against Atrial Fibrillation After Coronary Artery Bypass Grafting - Comparison With European Guidelines

Authors: Ishtiaq Ahmed; T. Nagarajan[1] J. Rickard; J. Shome; M. Hasan; M. Debelder; S. Hunter

1 James Cook University Hospital, United Kingdom

Objectives: Atrial fibrillation is a common arrhythmia post cardiac surgery and is associated with neurological complications, haemodynamic changes, prolonged hospital stay and increased cost. We examined beta blocker use after coronary artery bypass grafting (CABG) in accordance with european guidelines, to reduce the incidence of AF.

Methods: A retrospective audit of 103 consecutive patients undergoing CABG only, between April and July 2010 was carried out by case note review.

Results: 103 patients underwent CABG surgery. The median age was 67 years (range 39-84). 80 (78%) were male. Median additive Euroscore was 3 (range 0-16). 93 (90%) underwent cardiopulmonary bypass, 7 (7%) had prolonged ventilation postoperatively (>24 hours) and 5 (5%) had a previous history of paroxysmal AF. 31 (30%) of patients developed AF post operatively, with a peak incidence at day 3. Beta blockers were prescribed in 95 (92%) patients. Of the 8 patients who were not prescribed a beta blocker, reasons stated for omission included asthma (2), calcium channel blocker (1), beta blocker intolerance (2) and no reason (3). Unfortunately only 63 (61%) received the beta blocker within the first 2 days postoperatively. At discharge 95 (92%) patients were in sinus rhythm. Of those not in sinus rhythm (8), only 1 had a previous history of paroxysmal atrial fibrillation. Patients who developed AF postoperatively had a significantly increased length of stay (median 9 days) compared to those who remained in sinus rhythm (median 6 days) ($p<0.05$).

Conclusions: In line with published standards, the majority of patients undergoing CABG in this institution received beta blockers. However even with a high preoperative (81%) and postoperative (92%) beta blocker prescription, there was a significant incidence of AF postoperatively. Only 61% received the beta blocker within the first 2 days postoperatively. This could be a reason for the high incidence of AF. Re-audit is ongoing and results will be available.

141 Implications of Delayed Discharge in a Large Adult Cardiothoracic Centre

Authors: Michael Wilson; G. Niranjan; S.C. Clark

Freeman Hospital, United Kingdom

Objectives: In times of financial austerity all healthcare providers are tightening the fiscal belt. We hypothesised delayed discharge when deemed medically fit culminates in significant financial and resource wastage. Our audit aimed to identify the aetiology, prevalence and costs involved with delayed discharge in a large cardiothoracic unit.

Methods: Over a two month period we identified patients who were not discharged from hospital on the same day they were deemed medically fit and reasons for the delay. We calculated the number of additional hospital days resided and associated costs.

Results: There were 331 cardiothoracic admissions during the study period of which 31 patients (9.4%) had delayed discharge despite being declared ready and medically fit. Delayed patients stayed a mean of 4.5 additional days (range 1-25 days), totalling 139 additional days. 45% of cases were due to delays in local hospital transfer and 16% due to obstruction in inter-specialty transfer within the same Trust. In those not awaiting transfer, discharge home was caused by problems with social work or occupational therapy input in 42%. In 16% problems were caused in arranging out patient services and in 42% delays were due to miscellaneous causes. This led to extra costs of £34,750 for the Directorate (equivalent to £208,500 per annum).

No. cardiothoracic beds (non HDU/ITU)	40
No. hospital beds	800
% cardiothoracic beds	5%
Cost of cardiothoracic bed per night	£250
Cost of cardiothoracic delays	£34,750 (£208,500 pa)
Total cost to hospital	£695,000 (£4,170,000 pa)

Figure 1- Financial costs incurred for delayed discharge.

Conclusions: A significant number of patients have delayed discharge from the cardiothoracic unit after being declared medically fit and ready by the team. This incurs substantial costs for the Directorate. Developing strategies to overcome reasons for delayed discharge should become a key focus of local and national hospital fiscal management and begin at the time of patient admission.

142 Worthwhile or Worthless? - Routine Post-operative Echocardiography after Valve Surgery

Authors: S. Laidler; G.Niranjan; S.C. Clark

Freeman Hospital, Newcastle, United Kingdom

Objectives: Practice varies regarding echocardiography following aortic or mitral valve replacement or repair. Some surgeons undertake intraoperative trans-oesophageal echocardiography (TOE) with no routine in-patient follow up transthoracic scan (TTE). Others routinely request a further in-patient scan before discharge. This study was designed to establish the safest and most cost effective standard on which to base future practice.

Methods: An audit was carried out over a period of 10 months where echocardiography reports and notes for every valve replacement or repair surgery patient were acquired. Group 1 had only an intra operative TOE during surgery. Group 2 had a TOE plus a routine post op TTE. Group 3 had a TOE and underwent TTE only if clinically indicated post op.

Results: 252 patients underwent valve surgery during the study period. 91 patients (33%) were in Group 1, 117 patients (42%) were in Group 2 and 44 patients (16%) were in Group 3. Where a TTE was clinically indicated (Group 3), 39/44 (88.6%) required some form of medical or surgical intervention and changed clinical management. No patients in Group 2 where routine TTE was performed following satisfactory intra-operative TOE required any interventions or alteration of the clinical plan. An excess of 122 TTE were therefore performed routinely at a cost of £10,980 to the Directorate. Patients in Group 2 had their discharge delayed by a mean of 2.8 days as a result of waiting for in-patient scans at a further additional cost of £85,400.

Conclusions: Routine TTE is not necessary when a TOE has been performed intra-operatively unless clinically indicated. When clinically indicated TTE findings are highly likely to lead to a medical or surgical intervention. Patients incur significant extension of in-patient stay waiting for routine TTE which are unlikely to change patient management. The cost of additional scans which are of no clinical benefit are significant.

143 Use of Mathematical Modeling to Compare Haemodynamic Effects of Hybrid and Surgical Norwood Palliations for Hypoplastic Left Heart Syndrome

Authors: Catriona Baker[1] D. Cosentino[2] C. Corsini[3] G. Pennati[3] G. Dubini[3] F. Migliavacca[3] T.Y. Hsia[1]

1 Great Ormond Street Hospital, United Kingdom; 2 University College London, United Kingdom; 3 Politecnico di Milano, Italy

Objectives: Hybrid stage 1 palliation for hypoplastic left heart syndrome comprises bilateral pulmonary artery banding with arterial ductal stenting. Flow characteristics differ from surgical Norwood possibly affecting systemic and cerebral oxygen delivery. Computational models were constructed to understand these influences.

Methods: 3-dimensional finite volume models were constructed of hybrid palliation and Norwood procedure with modified Blalock-Taussig or right ventricle-to-pulmonary artery shunts. The hybrid model incorporated a 7mm ductal stent with 2mm pulmonary artery bands. Surgical models included a 3.5mm Blalock-Taussig or 5mm right ventricle-to-pulmonary artery shunt. A 0-dimensional hydraulic network representing the complete circulation was constructed from pre-stage 2 clinical data and was coupled to each model. This clinically-validated multi-scale modeling allows study of flow characteristics, and global measurements such as cardiac output, saturations, oxygen delivery and ventricular performance.

Results: Hybrid palliation had the highest pulmonary-to-systemic flow ratio with lowest cardiac output. Systemic oxygen delivery was manifestly lower in hybrid palliation compared with surgical Norwood (right ventricle-to-pulmonary artery 640, Blalock-Taussig 591, hybrid 475ml/min/m2). Cerebral oxygen delivery was lowest in the hybrid with poorest ventricular performance.

Conclusions: Computational models support the theory that hybrid stage 1 palliation may provide inferior systemic and cerebral perfusion compared to surgical Norwood for hypoplastic left heart syndrome.

144 A Clinically Validated Patient-Specific Virtual Model to Compare Single Ventricle Stage 2 Surgical Strategies

Authors: Catriona Baker[1] C. Corsini[2] S. Schievano[3] E. Kung[4] G. Arbia[5] F. Migliavacca[2] G. Pennati[2] A. Marsden[4] I. Vignon-Clementel[5] A. Dorfman[6] T. Hsia[1]

1 Great Ormond Street Hospital, United Kingdom; 2 Politecnico di Milano, Italy; 3 University College London, United Kingdom; 4 University of California, San Diego, USA; 5 Institut National de Recherche en Informatique et en Automatique, France; 6 University of Michigan, USA

Objectives: Single ventricle surgical planning is challenging because of individual's haemodynamic and anatomical differences. Constructing a patient-specific pre-operative virtual model from clinical data and performing different surgical procedures allows study of post-operative haemodynamics. We compared performance of hemi-Fontan versus Glenn in the same virtual patient.

Methods: A 6-month-old was selected with pulmonary atresia, hypoplastic right ventricle and neonatally-constructed central shunt. Pre-stage 2 patient-specific 3-dimensional cardiac anatomy was constructed from magnetic resonance imaging. Clinical parameters from MRI, cardiac catheterisation and echocardiography were used to construct a 0-dimensional hydraulic network representing the pulmonary and systemic circulations. This was coupled to the anatomy forming a multi-dimensional model. This validated methodology allows study of flow characteristics, and clinical parameters such as pressure, oxygen delivery and cardiac output. The model allows comparison of different strategies. Virtual hemi-Fontan and Glenn procedures were performed on the same patient's pre-operative model. Post-operative simulations were run to compare performance. The real patient underwent hemi-Fontan. Post-operative clinical data was collected for validation against the hemi-Fontan model.

Results: Hemi-Fontan and Glenn showed no clinically significant differences. Mean aortic pressure 53.1 v 53.1mm Hg, superior vena cava 15.1 v 15.4mmHg. Ventricular work decreased by 12% in both. Pulmonary to systemic ratio 0.6 in both. The hemi-Fontan model fitted the real patient's data well (model mean aortic pressure 53.1mmHg, child's unagitated mean aortic pressure 52mm Hg).

Conclusions: This is the first patient-specific predictive model of stage 1 to 2 single ventricle surgery that has been validated against clinical data. There were no significant differences in performance of hemi-Fontan and Glenn anatomies.

145 Continued Surgical Review Meetings: A Multidisciplinary Clinical Model for Quality Control and Mentoring

Authors: Nicola Viola[1] D. Pousios[1] A. Lipnevicious[1] M.P. Haw[1] M. Kaarne[1] A.P. Salmon[1] K. Catchpole[2]

1 Southampton University Hospital - NHS Trust, United Kingdom; 2 Cedars Hospital, USA

Objectives: A staged mentoring system in congenital cardiac surgery is presented. A surgical performance monitoring and improvement tool is introduced.

Methods: All procedures performed by three surgeons between Jan 2010 and June 2011 were continuously reviewed every fortnight. Patient characteristics, diagnosis, surgical procedure and adverse events (AEs) were presented and discussed for each procedure. All entries were categorized as "mentored", as performed by a junior consultant, and "non-mentored" when performed by senior surgeons. Mentoring consisted in case-selection, surgical assistance or both. Results were compared with multiple ANOVA analysis.

Results: In the 18 months period 38 meetings were held and a total 729 procedures reviewed over three semesters. These included CCAD-eligible consecutive congenital cardiac operations and related interventions. In the non-mentored activity the averaged incidence of AEs was 0.76/Op, 0.32/Op and 0.27/Op, respectively. In the mentored activity incidence of AEs was 0.39/Op, 0.25/Op and 1.15/Op, respectively. The overall incidence of near misses was 0.05/Op, 0.06/Op and 0.06/Op respectively, and mortality rates 1%, 2.8% and 2.3% respectively. The mentored practice had a significantly lower incidence of AEs in the first semester of 2010 (0.39/Op vs. 0.76/Op, p=0.001) but a significant higher incidence in the first semester of 2011 (1.15/Op vs. 0.27/Op, p=0.001). The surgical review activity led to the preparation of two new sets of institutional guidelines, initiated two new clinical activities, and introduced the use of a new surgical technique in two cases.

Conclusions: Quality monitoring in a clinical setting allows high degree of scrutiny of surgical performance and immediate interventions when required. This mentoring system allows the full integration of surgeons still in a learning curve with no significant impact to the unit's quality levels.

146 Morbidity After Cardiac Surgery in Adult Congenital Heart Disease Patients. Does it Differ from the Acquired Heart Disease Patients?

Authors: N. Nikolaidis[1] S. Narsupalli[1] S. Mendis[2] R. Gunda[1] M. Haw[1] G. Veldtman[1]

1 Southampton University Hospital/Wessex Department, United Kingdom; 2 Southampton University, United Kingdom

Objectives: Currently little data is available on outcomes of cardiac surgery in Adult Congenital Heart Disease. Due to the advancements in congenital cardiac surgery and congenital cardiology in the last 5 decades, more than 85% of patients with Congenital Heart Disease are surviving to adulthood. Many of these patients require re-operations due to the natural course of the disease or complications from their previous operations.

Methods: This retrospective study included 135 ACHD patients, who had cardiac surgery at Southampton General Hospital from 2006 to 2009. We also included 42 patients with structurally normal heart and had cardiac surgery for acquired cardiac conditions as a Control group. Patients with Fontan surgery and Marfan syndrome were excluded from the study. Preoperative, intraoperative and postoperative data were analysed in both ACHD group and Control group to identify risk factors for morbidity and mortality.

Results: In ACHD the in hospital mortality was 0.7%. In Control group no deaths were observed. In ACHD patients total in-hospital stay was longer in patients with longer cardiopulmonary bypass (CPB) time (p=0.005), aortic cross clamp time (p=0.013) and higher alkaline phosphatase level (p=0.005). Early postoperative complications were higher in ACHD patients with longer cardiopulmonary bypass time (p=0.04) and presence of pulmonary artery hypertension (p=0.012). Similar affects were not observed in control group.

Conclusions: Even though the pre-operative and operative characteristics are similar to both groups, the morbidity is more in ACHD group. Longer CBP time, aortic cross clamp time and presence of pulmonary hypertension are risk factors for higher morbidity in this group.

147 Controlling Reoxygenation During Cardiopulmonary Bypass Reduces Transcriptomic Changes in Cyanotic Patients with Tetralogy of Fallot

Authors: Massimo Caputo[1] D. Kenny[1] S. Stoica[1] A.J. Parry[1] G.D. Angelini[2] M. Ghorbel[2]

1 Bristol Royal Hospital for Children, United Kingdom; 2 Bristol Heart Institute, United Kingdom

Objectives: This study investigates the effects of controlled re-oxygenation CPB on gene expression changes in cyanotic hearts of patients undergoing surgical correction of tetralogy of Fallot (TOF).

Methods: Cyanotic TOF patients undergoing cardiac surgery were randomised to receive either controlled reoxygenation (50-80 mmHg; n=10) or hyperoxic/standard (150-180 mmHg; n=10) CPB. Ventricular biopsies were obtained immediately after starting and before discontinuing CPB. Oligonucleotide microarray analyses of over 47,000 genes were performed on the samples and the array results validated with real-time PCR.

Results: Gene expression profiles before and after hyperoxic/standard CPB revealed 35 differentially expressed genes with 3 up-regulated and 32 down-regulated. Upregulated genes included two E3 Ubiquitin ligases HECTD1 and DTX3. The products of downregulated genes included intracellular signalling kinases MAPK8 and NLK, metabolic process proteins and transport factors: SLC39A8, SLC25A30 (mitochondrion protein). In contrast, gene expression profiles before and after controlled reoxygenation CPB revealed only 11 differentially expressed genes with 10 upregulated including extracellular matrix proteins, transport factors and 1 downregulated. The comparison of gene expression following hyperoxic/standard and controlled reoxygenation CPB revealed 59 differentially expressed genes, with 6 upregulated and 53 downregulated. The upregulated genes included PDE1A, MOSC1 and CRIP3. The downregulated genes were functionally clustered into 4 major classes involved in the normal cell function: extracellular matrix/cell adhesion, transcription, transport and cellular metabolic process.

Conclusions: This study provides direct evidence that hyperoxic/standard CPB decreases the adaptation and remodelling capacity in the myocardium of cyanotic patients undergoing TOF repair. These genomic alterations can be reduced by using a novel and simple CPB strategy of controlled re-oxygenation.

148 Outcome of Slide Tracheoplasty for Long Segment Congenital Tracheo-Bronchial Stenosis

Authors: S. Speggiorin[1] C. Butler[1] T. Dominguez[2] D.J. Roebuk[1] C.A. Mclaren[1] M.J. Elliott[1]

1 Tracheal Team - Great Ormond Street Hospital, United Kingdom; 2 Cardiac Intensive Care Unit - Great Ormond Street Hospital, United Kingdom

Objectives: This study describes surgical results of the slide-tracheoplasty in children with long segment congenital tracheal stenosis.

Methods: Demographic data, preoperative conditions were collected. Mortality, postoperative complications, need of postoperative airway dilatation or stenting were analysed.

Results: Eighty-four patients (median age 6.6 months 5 days -14 years) underwent slide-tracheoplasty (STP). Fifty-eight patients (69%) had associated cardiovascular anomalies. Preoperative ventilation was necessary in 44 pts (52%) while ECMO in 10(11.9%). Abnormal bronchial arborisation was present in 22 pts (38.1%) (carinal trifurcation in 12 (14.3%)). Airway stenosis was extending in one or both bronchi in 21 pts (25%) and preoperative malacia was present in 15 (17.9%). Slide tracheoplasty was limited to the trachea in 39 patients (46.4%). Overall survival is 86.9% (11 patients). Post-STP dilatation was needed in 28 pts (33.3%), and stenting in 18 (21.4%). Univariate analysis shows preoperative ventilation ($p<0.01$), tracheobronchial stenosis ($p=0.03$), preoperative malacia ($p<0.001$) and cardiovascular anomalies ($p=0.035$) were associated to mortality. The presence of carinal trifurcation ($p=0.04$) and preoperative malacia ($p<0.001$) are associated to postoperative airway stenting.

Conclusions: Slide tracheoplasty is a reliable and pliable technique associated to low morbidity and mortality. The presence of preoperative malacia is a very significant risk factor both for death and postoperative stenting, preoperative ventilation and tracheobronchial stenosis are significant risks factors for death while carinal trifurcation for stenting.

149 Efficacy at One Year of Lung-Sparing Surgery for Malignant Pleural Mesothelioma

Authors: V. Ambrogi; T.C. Mineo

Thoracic Surgery Tor Vergata University Rome, Italy

Objectives: Lung-sparing surgery as treatment of malignant pleural mesothelioma has been considered less radical and more tolerable than extrapleural pneumonectomy. This study is aimed at evaluating the clinical efficacy including cardio-pulmonary function, symptoms relief and quality of life after lung-sparing surgery in malignant pleural mesothelioma.

Methods: Between 1997 and 2010, 31 consecutive patients underwent pleurectomy-decortication including pericardium (n=17) and/or hemidiaphragm (n=13). Clinical evaluation entailed pre and 12-month postoperative comparison of pulmonary (forced vital capacity) and cardiac functions, exercise tolerance test (6-minute walk), symptomatic multiple scales assessment (pain, dyspnea, cough, Karnofsky index), and quality of life questionnaires (Short-Form-36 and St.George's Respiratory).

Results: Thirty-day postoperative major morbidity was 19%, with no mortality. At one year, 21 patients were still alive. Values of the majority of the variables were greater than the baseline in at least one third of the surviving patients as shown: pain (from 6.1±1.5 to 5.8±1.6, p=0.09, improved pts 39%), dyspnea (3.1±1.0 to 2.5±1.3, p=0.006, 43%), cough (1.7±0.6 to 0.9±0.5, p=0.04, 39%), forced vital capacity (70±12 to 75±10, p=0.04, 43%) 6-minute walk (381±42 to 419±42, p=0.03, 43%), Karnofsky Index (84±8 to 89±8, p=0.04, 39%), SF36-physical (25±13 to 27±17, p=0.03, 39%), SF36-mental(44±11 to 34±11, p=0.02, 0%), St.George's (32±22 to 27±21, p=0.02, 39%).

Conclusions: Conclusions.Lung-sparing surgery is effective in achieving both clinical and quality of life improvement at one year.

150 Pleurectomy/Decortication Versus VATS Pleurodesis for Malignant Pleural Mesothelioma

Authors: Eustace Fontaine; M. Diab; C. Menakaya; I. Whittle; M. Shackcloth; M. Poullis; N. Mediratta; M. Carr

Liverpool Heart and Chest Hospital, United Kingdom

Objectives: Pleurectomy/decortications (P/D) and VATS pleurodesis are surgical strategies for controlling the symptoms of malignant pleural mesothelioma (MPM) such as pain and dyspnoea secondary to pleural effusion. P/D has also been offered to prolong survival because of its cytoreductive role. We evaluated the efficacy of these two treatment strategies on symptom control, outcomes, and long term survival.

Methods: We analysed a prospectively collected thoracic database on patients undergoing P/D or VATS pleurodesis for MPM between 1st Nov 2003 and 31st December 2009 with epithelioid or mixed cell type. 47 patients underwent P/D for symptom control of pain and dyspnoea, and cytoreductive intent as part of a multimodality strategy. 101 patients underwent VATS pleural biopsy and talc pleurodesis for diagnostic purposes and control of pleural effusion.

Results: The median age for the P/D group was 60 years (range 64-71) compared to 70 (range 63-76) for the VATS group; p-value 0.002. 16 patients (34%) in the P/D group had neoadjuvant chemotherapy compared to 2(2%) in the VATS group; p-value <0.0001. There was one in-hospital death in each group. There was one recurrence of pleural effusion in the P/D group but the efficacy of VATS pleurodesis to control effusion could not be evaluated because of limited follow up. The median survival after P/D and VATS pleurodesis were 12 months and 11.2 months respectively.

Conclusions: P/D was very effective at controlling pleural effusion but this more radical procedure did not confer a survival advantage compared to the less aggressive approach of VATS pleurodesis.

151 Treatment Related Survival in Localised Malignant Pleural Mesothelioma: Evidence Based Review

Authors: A.S.C. Aman S; G.S. Gelvez; S.M. Scarci; L.I. Levai; Z.J. Ziegler; M.K. Manley

Papworth Hospital NHS Foundation Trust, United Kingdom

Objectives: Survival in malignant mesothelioma is considered to be poor. The British Thoracic Society quote a survival of 8-14 months. We encountered patients with localised malignant pleural mesothelioma (LMPM) which is defined as disease histologically identical to the diffuse form, but without diffuse spread. In LMPM there may be extensive local disease including chest wall or lung invasion. For patients with LMPM being considered for surgery or multi-modality treatment our aim was to give evidence based advice on survival.

Methods: A detailed internet database search (1978 to November 2011) was performed with the search terms (localised malignant mesothelioma/ OR localised malignant pleural mesothelioma) AND (treatment/ OR Extrapleural pneumonectomy/ OR pleurectomy-decortication/ OR adjuvant therapy) AND (survival/ OR outcomes/ disease free survival).

Results: 150 papers were found, of which 7 represented the best evidence. Many papers were excluded because they did not distinguish between diffuse and localised mesothelioma. It is difficult to combine this data because of reporting differences. Some report the principal outcome as mean survival and others as disease free survival. Also the papers vary with respect to follow up duration. Papers were just case reports or series. We could calculate median survival to longest follow up by pooling 31 cases (6/7 papers) and this was 6.5 years (range of survival is 1 month to 11 years). The patient with the shortest survival died of unrelated cause. Actual median survival may be longer.

Conclusions: This review may be affected by a selection bias so we are guarded regarding our findings. However our analysis suggests that localised malignant pleural mesothelioma has a better survival than for the diffuse form. This may make aggressive surgery or multi-modality treatment more acceptable for such patients as compared to a palliative approach.

152 Outcomes of Trans Catheter Aortic Valve Replacement in the Nonagenarian Population - A Bridge too Far?

Authors: B. Chanda[1] R. Attia[2] C.P. Young[2] V.N. Bapat[2] M. Thomas[2] S. Redwood[2] J. Hancock[2] K. Wilson[2]

1 St.Georges Hospital, United Kingdom; 2 St. Thomas' Hospital, United Kingdom

Objectives: Promising early results of transcatheter aortic valve replacement (TAVI) in the high-risk patients with symptomatic aortic stenosis, has meant that an increasingly elderly population is now undergoing such transcatheter procedures. Outcomes in nonagenarians have not been well described yet. Therefore, the aim of this study was to determine outcomes in terms of early mortality and long-term survival in 36 nonagenarians after TAVI.

Methods: From September 2009-2010, 36 patients (mean age 92±1.8years) underwent TAVI. Mean Logistical Euro SCORE (LES) was 20.9. All patients were in NYHA class III-IV with severe aortic stenosis (AV area of 0.61cm2, Peak Gradient of 78.2mmHg, Mean Gradient of 50.1mmHg).

Results: Successful implantation was achieved in all patients. This was confirmed on peri-procedural and post procedural echocardiogram. Routes of implantation were usual (20 trans femoral, 10 trans apical, 3 trans aortic). 3 patients (8.3%) had postoperative stroke, 2 patients (5.5%) needed a permanent pacemaker and dialysis for renal failure. Mean length of ITU stay was 2.4 days and hospital stay was 11 days. There were no differences in outcomes dependent on the route of implantation. On the Kaplan-Meier survival analysis, survival was 83%, 66% and 19% at day 30, 1 and 2-years. LES>20 was a poor predictor of outcomes (31% vs. 33% mortality if LES>20). For LES≥15.2 due to age and no other co-morbidity outcomes were most favorable (in-hospital mortality 12.5%).

Conclusions: TAVI in nonagenarians carry a significantly higher risk of early mortality and reduced long-term survival. Despite increase in age profile of the population and an increasing number of very elderly presenting to heart team, elective intervention in patients aged over 90 should remain an infrequent procedure reserved for very carefully selected patients without significant co-morbidity and low frailty score.

153 Functional Quality of Life and Survival After Prolonged Intensive Care Unit Stay Following Cardiac Surgery

Authors: Gopal Soppa; C.S. Woodford; M. Yates; R. Shetty; M. Moore; O. Valencia; N. Fletcher; M. Jahangiri

St. George's Hospital, United Kingdom

Objectives: According to the recent 6th 'Blue Book', there is an increase in the number of high risk patients undergoing major cardiac surgery. Outcomes and functional quality of life for patients who had a prolonged intensive care unit (ICU) stay following cardiac surgery is unknown.

Aim: To assess survival and functional quality of life in patients who stayed in ICU greater than 5 or 10 days at St. George's Hospital.

Methods: Patients undergoing adult cardiac surgery, between October 2008 and October 2010, and stayed in ICU for 5-10 days (Group A) or > 10 days (Group B) were studied. Demographics, operative details and post-operative course data were collected prospectively. Follow-up of all patients was performed by telephone questionnaire. Functional quality of life was assessed using Karnofsky Performance score by one investigator for uniformity of scoring.

Results: Between 2008 and 2010, 2250 patients underwent adult cardiac surgery. Of these, 106 patients (4.7%, range 3.9-5.7) stayed greater than 5 days (Group A, n=5[2] Group B, n=54 having undergone various cardiac surgical procedures (Table 1). Mean Euroscore was 13 (range 1.5-86.5) for Group A and 13.6 (range 1-45.5) for Group B.. Mean ICU stay was 6.7 days (range 5-8.8) for Group A and 21.1 days (range 10-77.5) for Group B. In-ICU death occurred in 7 Group A patients (13.5%) and in 11 Group B patients (20.4%), p=0.34. Median follow-up of patients who survived to hospital discharge was 16 months (range 13 to 22). At 1 year, none of the patients had died in either group. Of the 88 survivors, 63% and 69% (Group A and Group B respectively) were contacted and the mean Karnofsky scores for Group A and Group B were 87% (range 70-100%) and 77.3% (range 40-100%) respectively indicating satisfactory functional quality of life.

Conclusions: Patients who have a prolonged ICU stay following cardiac surgery have high early mortality but satisfactory functional quality of life after one year and beyond.

Procedure	*Group A (5-10 days) n = 52*	*Group B (> 10 days) n = 54*
CABG	14	13
CABG + Valve	7	9
CABG + Other	5	3
Valve	16	10
Aortic Procedure	3	14
Other	7	5

154 Cardiac Surgery: 2 Year Survivals After Prolonged Cicu Stay

Authors: M.R. Forrest[1] I. Moideen[1] M. Columb[2] N. O'Keeffe[1]

1 Manchester Royal Infirmary, United Kingdom; 2 University Hospital of South Manchester, United Kingdom

Objectives: Although data exist regarding outcomes following cardiac surgery, there are few in patients who require prolonged intensive care. We identified risk factors for 2 year mortality from the time of surgery and also after discharge alive from CICU.

Methods: Patients who stayed in CICU for at least 5 days between 1997-2008 were studied using logistic regression to identify independent predictors of mortality. Significance was defined at P<0.05 (two-sided).

Results: N=649 patients stayed 5 or more days on CICU. Postoperative variables are shown in Table 1. Gender and ICU readmission were not significant.

Table 1. Mortality and risk factors with odds ratio (95% confidence interval) and P value.

Variable	*2 yr post operative*	*2yr post operative (% or p-value)*	*2yr post CICU discharge (% or p-value)*	*2yr post CICU discharge*
Mortality n/N	239/649	36.8%	91/496	18.3%
Age (years)	1.03 (1.01-1.05)	0.00027	1.04 (1.01-1.07)	0.0033
ARDS	1.78 (0.93-3.44)	0.084	0.84 (0.31-2.31)	0.84
Post-op CVA	4.12 (2.16-7.86)	0.0001	2.79 (1.24-6.26)	0.013
Haemofilter	2.34 (1.57-3.47)	0.0001	1.34 (0.75-2.42)	0.32
IABP	2.12 (1.17-3.83)	0.013	2.03 (0.93-4.44)	0.077
CICU (days)	1.01 (1.0-1.02)	0.054	1.02 (1.01-1.04)	0.0017
Bowel Infarct	4.36 (1.14-16.7)	0.031	0.63 (0.00-10.9)	0.91
Septicaemia	4.21 (2.35-7.55)	0.0001	1.11 (0.41-3.02)	0.84

Conclusions: Age, cerebrovascular accident (CVA), haemofiltration, intra-aortic balloon pulsation (IABP), length of CICU stay, mesenteric infarction and septicaemia were significant independent predictors of 2 year mortality. Only age, CICU stay and postoperative CVA remained as significant predictors of 2 year mortality after discharge alive from CICU. This suggests that for patients surviving some significant postoperative complications to discharge alive from CICU, these complications did not significantly increase mortality risk after discharge.

155 Survey of Antibiotic Prophylaxis for Infective Endocarditis (IE) in UK Dental Practices 3 Yrs Following NICE: What Dentists do and What Patients Want

Authors: M. Powell-Bowns[1] E. Farmer[2] p. Nanjaih[3] D. Richens[3] R. Jutley[3]

1 University of Dundee, United Kingdom; 2 University of Nottingham, United Kingdom; 3 Trent Cardiac Centre, United Kingdom

Objectives: NICE guidelines published in 2008 recommend no prophylaxis for any cardiac patient undergoing dental or non-dental manipulations except for procedures at an infected non-dental site. This is in contrary to recommendations from other international bodies who, although they have narrowed their recommendations, still recommend that high-risk patients receive prophylaxis. @AbsBody:**Objectives:** · To evaluate compliance in UK dental practices to NICE guidelines. · To obtain 'at-risk' patients' opinion regarding the use of IE prophylaxis.

Methods: 200 dental practices were randomly selected from a cohort of 5253 in eighteen UK counties. The practices received a questionnaire regarding their IE prophylaxis policy specific to cardiac patients, guidelines used and whom they considered to be 'at risk'. 50 pre- and post-operative patients considered to be "at-risk" by NICE underwent a telephone survey. The survey discussed current guidelines regarding IE prophylaxis and questioned patients regarding their preference.

Results: 96/200 (46.5%) dental practices responded, of which 96% reported following NICE guidelines. However, 46% of the respondents still prescribed antibiotics to whom they perceived to be "at-risk". When presented with scenarios involving such cases, only 22% correctly identified the cases as "at-risk". 100% of patients contacted completed the study. 26/50 (52%) patients felt they warranted IE prophylaxis. 34/50 (74%) were unaware that NICE do not recommend prophylaxis irrespective of risk. All patients interviewed were unaware other international guidelines recommend IE prophylaxis for "at-risk" patients. 96% of patients would prefer to have prophylaxis.

Conclusions: Our survey suggests that 36 months following publication of NICE guidelines regarding IE prophylaxis dentists remain unclear about its risks and merits. Considering that the overwhelming majority of informed "at-risk" patients want to receive prophylaxis, there is possibly now a need to review the NICE guidelines.

156 Management of Cardiac Patients with Increased Surgical Risk. Is Obtaining a Second Opinion Justified?

Authors: Alan Soo; O.C. Nzewi; A.N.J. Graham

Royal Victoria Hospital, United Kingdom

Objectives: Despite advancement in medical therapies, surgery remains an important treatment option for cardiac diseases. As the population ages, patients present with more complex cardiac problems and comorbidities. This contributes to increased surgical risk. With stringent auditing and open publication of surgical results, some surgeons may opt to turn down such high risk patients denying them a potentially lifesaving procedure. In this study, we aim to examine the results of patients who were operated on following an initial refusal for surgery.

Methods: Data was collected retrospectively from the local hospital database (Intellect) over a 10 year period. Patients included in the study had previously been turned down for open heart surgery by a consultant cardiac surgeon and subsequently underwent the same surgery performed by a different surgeon. Data examined included reasons for surgical refusal, estimated surgical risk, and outcome.

Results: 64 patients were included in the study. The commonest reason offered for surgical refusal was significant patient comorbidity (29.7%) Other reasons included poor coronary target for revascularisation (20.3%), poor heart function (17.2%), advanced age (3.1%), lack of conduit (3.1%) and obesity (3.1%). The average Euroscore for this group of patients were 8 +/- 3 (additive) and 15.9 +/- 14.5% (logistic). There were 6 hospital mortalities in this series (9.3%). The observed: expected mortality rate was 0.58.

Conclusions: In this study, patients who were operated on following a first time refusal of surgery had better than predicted outcomes, as predicted by conventional risk assessment. Therefore, we advocate that a second opinion should be routinely sought for patients who had been turned down for surgery.

157 Effect of Postoperative Non-Invasive Ventilation in Patients undergoing Coronary Artery Bypass Grafting (CABG)

Authors: Emad Al Jaaly[1] F. Fiorentino[2] O. Mangoush[3] B. Reeves[4] G.D. Angelini[2] P. Ind[2] S. Kemp[1] R. Shiner[2]

1 Hammersmith Hospital/ Imperial College Healthcare NHS Trust, United Kingdom; 2 Hammersmith Hospital/ Imperial College, United Kingdom; 3 Bengazi Medical Centre, United Kingdom; 4 Bristol Royal Infirmary/ University of Bristol, United Kingdom

Objectives: To compare the efficacy of non-invasive ventilation with bilevel positive airway pressure (BiPAP) versus conventional management for patients undergoing CABG. DESIGN: A 2 group-parallel randomised controlled trial.

Methods: Patients undergoing CABG. INTERVENTION: BiPAP in the immediate period after extubation was compared with conventional management, i.e. chest physiotherapy, nebulised bronchodilators (six hourly), coughing exercises, aerosol therapy, mobilization and incentive spirometry. OUTCOMES: The primary outcome was the time until fit-for-discharge. Secondary outcomes were levels of pCO2 and forced expiratory volume (FEV1), adverse events, intensive care and actual hospital stay.

Results: Between February 2008 and February 2011, 129 CABG patients were randomly allocated to NIV with BiPAP (66) or to conventional management (63). Three patients in the BiPAP group withdrew. Two patients died in hospital, one in each group (one on day 2 and one on day 5). Median hospital stay until fit-for-discharge was 6 days for conventional management (IQR, 5-7) and 5 days for BiPAP (IQR, 4-6 hazard ratio for difference 1.68, 95% CI: 1.08 to 2.31, p=0.019). There were no significant differences in intensive care and actual hospital stay. The mean difference in FEV1 at day 3 between the two groups was 0.13 (95% CI: -0.06 to 0.31) when adjusted for baseline. There was no significant difference in pCO2. Basal atelectasis was reported in 15 (24%) patients in the conventional management group and 2 (3%) patients in the BiPAP group. Other adverse events occurred with similar frequency in both groups but, overall, no serious adverse event was recorded for 44 (70%) patients in the BiPAP group compared to 26 (41%) patients in the conventional management group.

Conclusions: Among patients undergoing CABG the use of BiPAP appeared to increase the speed of recovery. We are currently considering the feasibility of a larger, multi-centre confirmatory trial.

158 Predictors of Total Morbidity Burden on Days 3, 5 and 8 After Cardiac Surgery

Authors: J. Sanders; J. Cooper; M.G. Mythen; H.E. Montgomery

University College London, United Kingdom

Objectives: The Cardiac Post-Operative Morbidity Score (C-POMS) is a new tool for the assessment of total morbidity burden after cardiac surgery. It represents total morbidity burden as a summary score, derived by noting the presence or absence of 13 morbidity domains. We sought to further validate its use by seeking association of previously identified predictors of post-operative outcome with C-POMS score on days 3, 5 & 8 (D3, D5 & D8) after cardiac surgery.

Methods: 450 patients were prospectively studied. Pre- and intra- operative details were obtained from the medical records. Variables included in ≥3 models of pre-operative morbidity risk assessment were noted and their ability to predict total morbidity burden (C-POMS score) was assessed. Variable selection used backwards elimination (threshold of $p<0.05$) with bootstrap resampling. Variables selected in ≥60% of 1000 bootstrap samples were included in the final models.

Results: Of the 450 assessed, (100%), 426 (94.6%) and 181 (40.2%) remained in hospital on D3, D5 and D8, respectively. Variables associated with C-POMS score on all days were age (all $p<0.001$), body mass index (D3 $p=0.03$, D5 0.006, D8 $p=0.05$), MVR surgery (D3 $p=0.03$, D5 $p=0.006$, $p=0.04$) and urgent priority (D3 $p=0.002$, D5 $p=0.05$, D8 $p=0.03$). D3 C-POMS score was also predicted by diabetes ($p=0.001$), CABG surgery ($p<0.001$) and chronic obstructive pulmonary disease ($p=0.02$) while diabetes ($p=0.03$), CABG surgery ($p<0.001$), renal disease ($p=0.002$) and left ventricular ejection fraction ($p<0.001$) were predictive of D5 score. Cerebrovascular disease, gender, hypertension, myocardial infarction, peripheral vascular disease and reoperation were not associated with C-POMS score on any day.

Conclusions: Risk factors for the new C-POMS total morbidity burden score reflect those previously identified as predictors of outcome after cardiac surgery, further validating its use as the only complete tool for assessment of total morbidity burden after cardiac surgery.

159 Pre-Surgical Wash of the Patients Reduces the Surgical Site Infections in Cardiac Surgery

Authors: Anna Coipell[1] S. Ambekar[2] S. Ibrahim[2] D. McCormack[2] A. Shipolini[2]

1 Barts and the London NHS Trust, United Kingdom; 2 London Chest Hospital, United Kingdom

Objectives: Surgical Site Infection (SSI) increases the risk of morbidity and mortality and has significant cost implications. Despite a variety of different skin disinfectant, post operative SSI's remain a major issue in cardiac surgical patients. We have developed a new method to improve skin decontamination at the time of surgery.

Methods: A prospective study was performed on patients undergoing cardiac surgery in a Central London Teaching Hospital. In Group I, 610 patients were treated using the conventional skin preparation. In Group II, 603 patients were treated using the new method. The method involves a non sterile wash in theatre using a surgical sponge soaked in 4% Chlorhexidine soap (Hibiscrub). All exposed surface areas were sponged and dried off with tissue paper and the process was repeated before the conventional sterile skin disinfection. Group I and II were matched for Body Mass Index (BMI), diabetes, renal failure, immune suppressed and urgent/emergent procedures.

Results: SSI (including harvest site and sternum) in Group I were 33 patients (5.41%). In Group II with the new pre-surgical wash, were 11 patients (1.82%), which represents significant reduction of wound infection ($p<0.001$). Breakdown of the sternal and harvest site infection, see table below. Group I (without pre-wash) Group II (with pre-wash) Sternum 22 patients (3.6%) 6 patients (0.99%) Harvest site 11 patients (1.8%) 5 patients (0.83%).

Conclusions: The result showed significantly reduced SSI's in group II where the new method was used. We recommend this pre-surgical wash to be used in all surgical patients.

160 A Pilot Randomised Control Trial, in ICU Patients, Comparing Seven Days vs Two Days Treatment with Antibiotics to Treat Infection of Unknown Origin

Authors: Nigel Scawn[1] D. Saul[1] D. Pathak[1] B. Matata[1] I. Kemp[1] R. Stables[1] S. Lane[2] A. Haycox[2]

1 The Liverpool Heart and Chest Hospital, United Kingdom; 2 University of Liverpool, United Kingdom

Objectives: Management of Cardiac ICU sepsis is complicated by the high incidence of Systemic Inflammatory Response Syndrome, which mimics sepsis but without an infective cause. In this pilot randomised trial we investigated whether, in the ICU, 48 hours of antibiotic treatment is adequate to safely treat suspected sepsis of unknown & unproven origin. We also explored the role of newer biomarkers for sepsis in predicting patients in which 48 hours of antibiotics might be inadequate

Methods: Patients in the cardiac intensive care were recruited if they were being started upon the 'Surviving Sepsis' Care Bundle antibiotics in the absence of an actual known cause for sepsis. Patients were randomised to either 48 hrs or 7 days of empirical antibiotics and they were then followed up for a total of 10 days.

Results: 46 patients were randomised- 23 in each group Sequential Organ Failure Assessment scores (SOFA) decreased over the trial period in both groups.Length of stay on ITU was shorter for those who received only 2 days of antibiotics & mortality was comparable between groups. There was no significant difference in the number of patients requiring further antibiotics between the two groups (13% vs 17%). Baseline procalcitonin analysis showed that it was a predictor of restarting antibiotics with an odds ratio of 1.45 (CI=1.04-2.02, p=0.01) & a strong predictor for the composite outcome measure (death and needing further antibiotics) with an odds ratio of 1.79 (CI=1.20-2.67, p= 0.005). Results from economic analysis showed a potential antibiotic cost saving of £200 per patient which extrapolated to a potential saving of over £100,000 per annum for our ICU.

Conclusions: The preliminary data from this study suggests that there are likely significant benefits of reducing broad spectrum antibiotics use in the ICU without undermining the patient's safety

161 Oxidative Stress Injury in Type 2 Diabetics Undergoing Coronary Artery Bypass Surgery

Authors: Ashvini Menon[1] E. Mulla[2] S. Hughes[2] J. Mascaro[1] M.J. Stevens[2] R.S. Bonser[1]

1 University Hospital Birmingham, United Kingdom; 2 Birmingham University, United Kingdom

Objectives: Poly (ADP-ribose) polymerase (PARP) is a nuclear enzyme that repairs damaged DNA strands. Increased oxidative stress in type 2 diabetics (T2DM) excessively activates PARP and depletes its substrate resulting in energy deficiency and cell death. This may relate to reduced ability of the diabetic myocardium to cope with ischaemia-reperfusion injury. Pre-operative PARP activation status has not been characterised in humans.We therefore evaluated myocardial PARP activation and plasma protein carbonyls (marker of oxidative stress injury) in T2DM and non-diabetic (non-DM) patients undergoing CABG.

Methods: Right atrial biopsies were obtained at initial venous cannulation and fixed in 10% formal saline.4ìm paraffin sections were prepared and incubated with mouse monoclonal anti-PAR (poly-ADP-ribose) antibody. Images were captured using a Ziess Axioshop-plus microscope and analysed using Axiovision 4.4 programme.The percentage of PAR stained nuclei was determined by image analysis using a Scion image programme.

Plasma protein carbonyl was measured using the Biocell PC Test kit (Biocell, New Zealand) at 0,6,12,24,48 and 72 hours following CABG.

Results: Twenty non-diabetic and 28 T2DM right atrial biopsies have been analysed so far. The median age (78 vs.73 years), extent of coronary artery disease and median ejection fraction (>50% in both groups) were not different. A significantly higher percentage of PAR positive nuclei was detected in the T2DM group (71 [65.2-76.9] %) compared to the non-DM subjects (45.2 [38.6-51.8]%),$p<0.001$.

Protein carbonyl values varied significantly over time in both groups ($p=0.02$).In T2DM, protein carbonyl values were significantly higher at 12, 24 and 48 hours post CABG($p<0.05$).

Conclusions: Cardiac PARP activation and oxidative stress markers are increased in T2DM. This may promote increased susceptibility to ischaemia-reperfusion injury and may contribute to worse post-CABG outcomes in T2DM. Ongoing studies are in progress to evaluate this relationship.

162 Impact of Acute Primary PCI Service Triaged by Emergency Medical Services on a Cardiac ITU

Authors: Moronke Abiodun Noah[1] S. Kaul[2] L. Kuppurao[2]

1 University Hospitals of Leicester NHS Trust, United Kingdom; 2 Royal Brompton and Harefield NHS Trust, United Kingdom

Objectives: Primary percutaneous intervention for ST elevation myocardial infarction in the community is a service provided at our hospital. Patients are triaged by the emergency medical service. We review the impact of this service on the cardiac intensive care unit.

Methods: Retrospective review of records of primary PCI patients managed in the intensive care unit between April 1 2010 and March 30 2011.

Results: 53 patients from the primary PCI service were managed in the cardiac ITU. Of these 45 were direct transfers from the catheter labs and 8 were via the ward. 16 patients had out of hospital arrest. Median age was 69. Procedure done were PCI (43), No PCI (10) [poor targets (5), Pacing wire (2) and none cardiac diagnoses (3)]. ITU interventions included ventilation (42), IABP (35), CVVH (23) and ECMO(2). Other major interventions included thoracotomy (1), laparotomy (1) and OGD(1). The median (IQR) duration of ITU stay was 5 (3 -11) days. Neurologic events included cerebral infarction (2), cerebral oedema (1), cerebral hypoxic injury (1) and seizures (2). ITU mortality for all the patients was 39.6% (21) and for patients that received PCI 35.7% (15).

Conclusions: The survival benefit of primary percutaneous intervention for patients with ST elevation myocardial infarction is already proven [1] with the majority of patients going on to be managed in the coronary care unit. A small proportion of patients however require intensive care management. In our study we focussed on the requirements and outcome of patients presenting via our PCI service to the intensive care unit. This cohort of patients had a significant level of support requirements not only with regards to advanced technology i.e. CVVH, IABP, ECMO; but also with regards to a draw on other specialities (surgery, gastroenterology, neurology, physiotherapy, radiology in this cohort). We conclude that a primary PCI service requires the support of a robust intensive care service and multidisciplinary team.

163 The Impact of Admission to the Intensive Care Unit After Thoracic Surgery

Authors: Louise Kenny; S.A. Stamenkovic; S. Barnard; J. Forty; M. Prabhu; S. Somisetty; S.C. Clark

Freeman Hospital, United Kingdom

Objectives: Thoracic patients may experience a turbulent time peri-operatively with complications necessitating transfer to ICU and multi-organ support. We sought to determine reasons and outcomes for ICU admissions after thoracic surgery and the impact on ICU resources.

Methods: We retrospectively reviewed the circumstances surrounding admissions from wards to the ICU following thoracic surgery between 2008-11 in one centre using the Intensive Care National Audit and Research Centre database.

Results: 62 admissions to ICU occurred from a thoracic workload of 3097 cases (2%). Mean age of ICU admissions was 66.7 years (range 16-88; median 70). Admission to ICU occurred between day 0-30 post-operatively (mean 6 days; median 3). Procedures included lobar resection (51.6%), pneumonectomy (4.8%), decortications (11.3%) and video-assisted thoracoscopic surgery (9.6%). Mean ICU stay was 8 days (range 0-4^{5} median 4). Primary causes of admission were respiratory failure secondary to pneumonia, lobar collapse or sputum retention (64.5%), sepsis (9.1%), renal failure (3.2%), bleeding (6.5%), gastrointestinal causes (4.8%), PE (1.6%) and other (11.3%). The mean number of organs requiring ICU support was 2.4 (range 1-^{5} median 2) with 59% requiring advanced respiratory support, 21% requiring renal support and 43.5% requiring advanced cardiovascular support. The mean ICNARC score was 20.21%. Overall mortality on ICU was 30.65%. The mean number of days between ICU admission and death was 7.7(range 0-4^{5} median 4.5). Thoracic admissions accounted for 3.76% of ICU days overall.

Conclusions: It is rare for thoracic patients to require ICU admission during their recovery but surgeons must remain vigilant peri-operatively for complications. ICU admission is associated with the need for multi-organ support, prolonged ICU stay and high mortality. Avoidance of post-operative pneumonia and sputum retention in particular will significantly reduce admissions and positively influence the use of valuable ICU resources.

164 The 'Ross in Valsalva' Operation

Authors: Hunaid Vohra; L. DeKerchove; D. Glineur; P. Norholmme; G. El Khoury

Saint Luc University Hospital, Belgium

We show a film of a 'Ross in Valsalva' operation in a 25 year old male with a heavily calcified bicuspid aortic valve. The valve is excised, the pulmonary autograft harvested and suspended in a valsalva prosthesis which is then implanted using the modified Bentall technique(technique shown). The homograft is then inserted in the pulmonary position.

165 Bi-leaflet and Commissural Reconstruction With Pericardial Patch in a Stenosed Type I Bicuspid Aortic Valve

Authors: Hunaid Vohra; L. DeKerchove; D. Glineur; P. Norholmme; G. El Khoury

Saint Luc University Hospital, Belgium

We show a film of a 26 year old man with a stenosed type I bicuspid aortic valve. Both leaflets and the raphe were very thickened with commissural fusion more on the right than the left. Commissurotomy and excision of adjacent leaflet tissue were performed and the right commissure with adjacent leaflet on both cusps were reconstructed with a pericardial patch.

166 David Operation, Leaflet Repair and Raphe Management in a Type I Restricted Bicuspid Aortic Valve

Authors: Hunaid Vohra; L. DeKerchove; D. Glineur; P. Norholmme; G. El Khoury

Saint Luc University Hospital, Belgium

We show a film of David operation for aortic insufficiency on a type I retricted bicuspid aortic valve in a 40 year old man. The techniques of bileaflet plication, shaving/suturing of the raphe, root dissection, prosthesis measurement, implantation, commissural re-suspension are shown.

167 Surgical Techniques of Intercostal Artey Revascularization During Open Thoracoabdominal Aneurysm Repair

Authors: Mohamad Bashir; M. Field; M. Kuduvalli; A. Oo

Institute of Cardiovascular Medicine and Science (ICMS), Thoracic Aortic Aneurysm Service, Liverpool, United Kingdom

Objectives: To describe surgical techniques for managing intercostal arteries during thoracoabdominal aortic aneurysm repair (TAAAR).

Methods: Techniques demonstrated in our video are parallel tube graft, aortic patch anastomosis, end-to-end anastomosis and oversewing of the intercostals.

Results: Between September 1998 and March 2011, 107 patients underwent open surgery on descending thoracic aortic and thoracoabdominal aortic aneurysm requiring management of intercostals arteries using a combination of one or more of the described techniques. The elective 30 day mortality was 6.25% and the paraplegia rate was 1.86%.

Conclusions: Paraplegia is an extremely morbid complication associated with TAAA repair. The choices of repair technique depend on three factors: 1) surgical Approach 2) pathology 3) anatomy. These techniques are an important adjunct in preventing spinal cord ischemia during TAAAR.

168 A Novel And Safe Approach To Complex Aortic Surgery

Authors: John Lu; M. Shajar; J. Campbell; S. Hammond; S. Naik

Trent Cardiac Centre, United Kingdom

Objectives: Peripheral cannulation is a technique which makes complex cardiac surgery safer, easier and consequently beneficial, for the patient in terms of post-operative recovery. It minimise "space occupation" by large cannulae in the chest hence improving exposure, visibility, minimise dissection and retraction. This reduces trauma to the heart and reduce the risk of intra and post-operative haemorrhage. It also contributes to myocardial protection by reducing mediastinal collateral flow, which tends to flush away cardioplegia.

Methods: 15 patients underwent complex aortic surgery between 2008 and 2009. The mean logistic EuroScore was 20%. The mean cardiopulmonary bypass and cross clamp times were 229 minutes and 154 minutes respectively.

Types of Procedure	*Number of cases*	*Logistic Euroscore*
Acute type A aortic dissection	6	29
Redo aortic root	4	18
Aortic root and other valve procedures	5	10

Femoral Arterial Cannulation: Arterial cannulation is achieved with a small horizontal incision (2-3cm) and the DLP (Medtronic) cannula inserted percutaneously.

Femoral Venous Cannulation: The Smart venous cannula is inserted percutaneously without skin incision. The Smart canula® is collapsed over a mandrel prior to insertion and re-expanded in situ resulting in superior flow, much smaller access aperture, and less trauma result. This avoids the need for vacuum assist drainage and minimises trauma to blood components in the bypass circuit. It particularly improves the venous drainage of the lower body and hence reduces the ischaemic risk to the gut and kidneys. Closure of femoral vein in open cannulation can be difficult and this technique avoids the problem.

Percutaneous SVC Cannulation SVC cannulation is achieved using 15F Biomedicus cannula (Medtronic). All the cannulations above were guided by transesophageal echocardiography.

Results: The mortality rate was 6.6% (n=1). There were no injuries to the heart for the redo cases. In addition there were no strokes or ischemic bowel complications.

Conclusions: Complex long aortic cases can be done using peripheral bypass circuit resulting in good outcomes for this patients' group.

169 Equivalent Long Term Survival of Heart Transplant Patients Receiving Resuscitated Donor Hearts

Authors: Sharath Hosmane; M. Devbhandari; J. Salaie; S. Williams; R. Venkateswaran; N. Yonan

University Hospital of South Manchester, United Kingdom

Objectives: Resuscitated donor hearts have been used to expand the donor pool in recent years. Concerns remain over the short and long term outcome of these organs due to the potential ischemic damage.

Methods: Between 1996 and 2011, 263 adult heart transplantations were performed in our institution. 241 patients received hearts from donors without cardiac arrest (group 1) while 22 patients received resuscitated donor hearts (group 2). The decision to use the resuscitated heart was at the discretion of the transplanting surgeon. Their outcomes were compared using Kaplan Meir survival curve and Log rank test in SPSS statistical package.

Results: The mean donor and recipient ages (group1±sd vs group2±sd, p value) were 34.1±12.2 vs 35.1±10.6, p=0.68 and 48.0±11.9 vs 47.8±13.4, p=0.94 respectively. The ischemic times in group 1(217.7±48.6) and group 2 (233.9±47.2) were similar (p=0.13). Post operative need for circulatory support (Intra Aortic Balloon Pump or mechanical assist devices) were also similar (31.9% vs 50%, p=0.08). The median ITU stay between group 1 and 2 were not statistically different (6 vs 5 days, p=0.38). The 30 day mortality and 5 year survival in Group 1 and 2 were 8.7% vs 13.6% and 76.4% vs 75.2% respectively (p=0.30).

Conclusions: Resuscitation status of donor heart has no adverse effect on short or long term outcomes following transplantation in carefully selected cases. The donor organs should not be excluded on the basis of resuscitation status alone.

170 Personalised Surgical Repair of Left Ventricle Aneurysm With Computer Assisted Ventricular Engineering

Authors: István Hartyánszky[1] A.T. Tóth[2] B.B. Berta[2] M.P. Polós[1] G.V. Veres[1] B.M. Merkely[2] F.H. Horkay[1] J.P. Pepper[3]

1 Semmelweis University, Department Cardiac Surgery, Hungary; 2 Semmelweis University, Heart Center, Budapest, Hungary; 3 Royal Brompton and Harefield NHS Trust, London, United Kingdom

Objectives: Although circular ventricle resection techniques are the gold standard of left ventricle restoration, these techniques can lead to suboptimal results. Postoperative systolic resection can be inadequate, as it must be planned on a heart stopped in diastole. Low cardiac output due to insufficient left ventricular volume results in a potentially unstable condition, and cannot be corrected. Our aim was to find a preoperative method to minimize risk and maximize outcome with ventricle restoration.

Methods: We have created a novel method combining surgery with gadolinium enhanced magnetic resonance to construct a preoperative 3D systolic heart model. The model was utilized to determine resection points, that could be intraoperatively used. According to our calculations with the predetermined resection line the calculated percentage reduction in LV volume was above 30%, and LV volumes were predicted above normal values, thus performing the operation using these resection points is likely to be safe and effective. We had a mixed, real life patient group: mitral insufficiency or pulmonary hypertension was not an exclusion criteria.

Results: 41 procedures (12 concomitant mitral valve plasty) were done on consecutive patients on a one surgeon experience. There has been no mortality during follow-up (average follow-up time was 26±6 months). MACE incidence was 32% postoperatively (n=13). Control MRI showed a significant improvement in ejection fraction (18,3±4,3vs.31,3±3,[3]p=0,04). All patients improved NYHA class postoperatively (41 patients NYHA III/IV vs.39 NYHA I/II).

Conclusions: Using this model we were able to find the optimal resection line providing excellent postoperative result, thus minimizing the risk of low cardiac syndrome.

171 Concomitant Mitral Valve Surgery in Patients Undergoing Surgical Ventricular Restoration for Ischemic Cardiomyopathy

Authors: Reubendra Jeganathan[1] M. Meganti[2] V. Rao[2]

1 Royal Victoria Hospital, United Kingdom; 2 Toronto General Hospital, Canada

Objectives: Ischemic mitral valve regurgitation is associated with a significant reduction in survival and its treatment in patients undergoing surgical ventricular restoration (SVR) remains controversial. We evaluated our 11-year experience in this cohort of patients.

Methods: Between January 2000 and December 2010, a total of 282 patients underwent SVR, of which 45 had concomitant mitral valve surgery. The data was retrospectively analyzed to identify variables that could predict early mortality.

Results: Overall in-hospital mortality was 6.4%, of which 5.1% occurred in patients undergoing SVR and 13.3% in patients undergoing SVR + mitral valve surgery ($p=0.048$). Patients undergoing SVR + mitral valve surgery had worse LV dysfunction, EF <20% ($p=0.007$), NYHA class IV ($p=0.019$) and posterior SVR ($p<0.01$), compared to patients undergoing SVR. These patients had an increase in post-operative inotropic support ($p<0.01$), IABP support ($p<0.01$) and low cardiac output syndrome ($p<0.01$). In patients undergoing SVR + mitral valve surgery, 34 patients had mitral valve repair and 11 patients had mitral valve replacement. The mortality was 17.6% vs 0% ($p=0.31$) in the mitral valve repair vs mitral valve replacement groups respectively. The cohort of patients undergoing SVR + mitral valve repair had poorer LV dysfunction and more advanced symptoms.

Conclusions: Patients undergoing SVR have excellent early outcomes. The management of patients with concomitant ischemic mitral valve regurgitation requires careful pre-operative assessment, with the decision making process tailored to the individual patient according to specific criteria.

172 Cost-Benefit Analysis of MCS Intervention in Patients with Advanced End-Stage Heart Failure

Authors: Tara Ni Dhonnchu; R. Regan; J. McCarthy

Mater Misericordiae University Hospital, Ireland

Objectives: Mechanical Circulatory Support (MCS) is a well established treatment option for patients suffering from advanced end-stage heart failure. The ability of these devices to support patients either as a bridge to transplant (BTT) or as destination therapy (DT) have benefitted over 7,000 patients who have been implanted with a Heartmate II Left Venticular Assist System (HM II LVAS) (Thoratec Corp. Ca. USA.) since 2005.

Methods: We performed a retrospective cost analysis of five patients who have been implanted with this pump. This cost profile included all implant costs with the device including operative costs and post-implant in-patient hospital stay. In addition, any subsequent re-admission costs post-discharge were also included. We subsequently looked at the cost of this same cohort of patients prior to MCS implantation for in-patient medical management of their heart failure. We then compared both costs.

Results: The cost of this pump is €83,000. Total costs associated with the implantation of 5 devices in these patients and their hospital stay post implantation and subsequent re-admission costs to date is €232,000 per patient. Total costs associated with in-patient medical management of 5 patients prior to device implantation were €132,250 per patient.

Conclusions: We conclude that the use of MCS in patients being treated for advanced end-stage heart failure has an initial excess cost burden on the hospital but that overall freedom from re-admission (1882 days) for heart failure management post MCS implantation gives a potential saving of €508,140 per patient plus opportunity costs. This saving more than offsets the initial excess cost burden of €99,750 per patient. The actual costs of managing our cohort of 5 patients on MCS therapy amounts to € 616.37 per patient per day to date.

173 Mid-Term Results of "Cut and Transfer" Technique, Posterior Papillary Muscle Relocation and LV Plication in Patients with Ischemic Cardiomyopathy

Authors: G. Cappabianca; N. Gallo; V. Pestrichella; G. Contegiacomo; G. Esposito

Humanitas Gavazzeni Hospital, Italy

Objectives: Functional mitral regurgitation in patients with chronic ischaemic cardiomyopathy denotes abnormal function of normal leaflets due to left ventricular enlargement and leaflets tethering. We present the mid-term results of a new approach to mitral repair using a combination of the following subvalvular procedures: 1) reimplant of basal chordae on the free edge of the anterior leaflet ("cut and transfer" technique), 2) relocation of the posterior papillary muscles closer to the mitral annulus. 3) plication of the postero-lateral wall of the left ventricle.

Methods: From 2008 to 2011, 46 patients with moderate to severe ischemic mitral regurgitation underwent CABG + mitral valve repair using the "cut and transfer" technique for the anterior leaflet and papillary muscle relocation for the posterior leaflet. All the patients received a "true-sized", complete, rigid annuloplasty ring. In 20 patients with severely dilated LV a plication of the postero-lateral wall of left ventricle was performed in order to reduce the LV diastolic diameter and therefore the tethering of the mitral leaflets.

Results: The mean number of coronary artery bypass grafts was 2.4 ± 0.4. Hospital mortality was 2.4%. No patient died during one year follow-up and NYHA class improved from 3.4±0.5 to 1.4±0.6, $p<0.005$. The 1-year TTE showed the following changes from the baseline: MR grade (0-4) 2.9±0.4 vs 0.2±0.4, $p<0.005$. LVESVI (ml/m2) 52.7±13.1 vs 48.2±10.1, p=ns. LVEDVI (ml/m2) 92.9±16.5 vs 83.4±15.9, $p<0.025$. EF (%) 37.8±6.3 vs 44.2, $p<0.005$.

Conclusions: Both clinical and echocardiographic follow-up show that reducing the tethering of the mitral leaflets with tailored interventions on subvalvular apparatus without undersizing the mitral annulus can effectively correct functional mitral valve regurgitation in patients with ischaemic cardiomyopathy.

174 Optimized Right Ventricle Function Prior to Left Ventricular Assist Device Implantation - Honeymoon Period or Sustainable Success?

Authors: T.A. Butt; M.S. Yousafzai; F. Oezalp; A. Siddique; D. O'Leary; C. Roysam; G. MacGowan; T. Pillay; S. Schueler

Newcastle upon Tyne Hospitals NHS Foundation Trust, United Kingdom

Objectives: Pre-operative RV optimisation was introduced as a safe strategy to avoid the need of mechanical RV support in LVAD patients since 2009.However the crucial question remains whether preservation of RV function is sustainable in the longer term. The purpose of this retrospective study was to look at longer term-assessing for RV function in patients post successful LVAD implantation.

Methods: Seventy patients underwent LVAD implantation as bridge to heart transplantation for various pathologies between January 2009 and September 2011 using Ventrassist (6) and Heartware (64) device.Patients with congenital heart disease and patients with less than three months follow-up were excluded. 46 patients were divided into three groups according to pre-operative right ventricular function. Right ventricular function was assessed by Echocardiography and was scored to be normal (1), mild (2), moderate (3) and severe (4).All patients had undergone a strict optimization protocol prior implantation, and no patient required mechanical RV support.

Results: Group A (6 patients) had normal or mild impairment of RV pre-operatively. Group B (17) had moderate impairment and group C (23) had moderate to severe RV dysfunction pre-op.The mean (sd) pre-op RV function score in group A, B and C was 1.7(0.5), 2.75(1.06), 3.9(0.19) respectively. In group A, RV slightly deteriorated at 3 months with a mean score of 2.75 (1.06).However, at 6 months, came back to normal. In Group B, there was an improvement to 2.7(0.81) at 12 months. In group C, RV score gradually improved to 2.55 (0.92) at 6 months (mean 2, diff 1. 95% CI 0.72-1.7 P <0.0001) There was no death related to RV failure within the study, and no patient required mechanical RV support in the observation period.

Conclusions: Preoperative RV optimization and thorough management offers a safe strategy for sustainable improvement of impaired RV function in the longer term after LVAD implantation.

175 Improving Early Medical Management and Transfer of Patients with Acute Aortic Syndromes: Role of an Aortic Advanced Nurse Practitioner

Authors: M. Roberts; J. Tan; V. Fretwell; M. Field; M. Kuduvalli; A. Oo

Liverpool Heart and Chest Hospital, United Kingdom

Objectives: Registry data suggests a mortality of 1% per hour during the first 48 hours of an acute Type A aortic dissection. Good initial medical management and timely transfer for surgery is key to good outcomes. The American Heart Association have provided us with guidelines for initial management. Our objective was to extrapolate "Key Quality Indicators" (KQI) from this document and benchmark our referring hospitals against this standard, instigating measures to improve the service. One of the designated roles of our new "Aortic Advanced Nurse Practitioner" is to improve efficiency and effectiveness of this process. This work describes the initial audit and processes to improve the service.

Methods: A retrospective case notes review was undertaken of all Type A acute aortic dissection between October 1998 and July 2011. Key Quality Indicators chosen (excluding diagnostic indices) were presence on transfer of: arterial monitoring, urinary catheter, IV antihypertensive, and timely transfer (symptoms to theatre, diagnosis to theatre and transfer to theatre).

Results: We transferred 92 acute Type A aortic dissections during this period. Availability of notes and documentation was poor. For all transfers, percentage of patients with documented evidence of fulfillment of KQI's were: arterial monitoring (12%), urinary catheter (35%) and antihypertensive treatment (45%). For Type A aortic dissection, average time were for: "symptoms to theatre" (median 9-10 hours), "diagnosis to theatre" (median 18 hours) and "arrival to theatre" (median 3-4 hours).

Conclusions: Documentation is poor as are quality of initial triage, medical management and transfer times. We have started a nurse led programme of education in referring centres.

176 Patients' Perceptions of the Cardiothoracic Advanced Nurse Practitioner Role

Authors: Jane Wild; C. Taylor; G.J. Cooper

Northern General Hospital, United Kingdom

Objectives: In August 2009 we introduced a combined rota for Cardiothoracic Advanced Nurse Practitioners (ANP) and 'SHO' level junior doctors. This places an ANP on every shift except for 1 night per week. We have assessed patients' perception of the role. ANPs are trained at Master's level in non-medical prescribing, clinical assessment skills and chest x-ray interpretation.

Methods: To assess patient perception of the ANPs we undertook a survey of 50 random pre-operative patients between 1/9/11 and 31/11/11. The survey was conducted in the pre-assessment clinic. All patients invited to participate did so.

Results: Two-thirds of respondents were male and the median age bracket was 55 to 64 years. The responses to the question 'Do you think an ANP should be able to perform the following tasks' are shown in the table. 95% agreed that ANPs should be able to put in a drip and examine on admission but only 76% and 67% agreed that they should be able to prescribe or change medicines respectively.

Conclusions: Patients are generally positive and accepting of the role however, they are less certain about ANPs prescribing.

	Strongly agree (%)	*Agree (%)*	*Neutral (%)*	*Disagree (%)*	*Strongly Disagree (%)*
Examine on admission	57	38	3	0	3
Put in drip	65	30	3	0	3
Prescribe	38	38	11	8	5
Change Medicines	32	35	16	11	5
Decide on tests	49	38	11	0	3
Start urgent treatment	59	24	14	0	3

177 The Impact of the Cardiothoracic Ward Nurse Practitioner Upon Cardiothoracic Patient Care

Authors: Dawn Southey; H. Luckraz; E. Lengyel; J. Gunn; K. Raybould; S. Sherwood; H. Flavell; J.S. Billing; W. Pugsley

New Cross Hospital, Wolverhampton, United Kingdom

Objectives: Pressures on junior doctors hour and training as well as continuity of care, have highlighted the need for Specialist Ward-based nurse practitioners. This approach has been adopted since October 2007 within our unit.

Methods: To assess the impact of a fully-fledged and rostered ward cover by NPs upon cardiothoracic patient care.

Results: NPs (n=5) took responsibility for the ward management of cardiothoracic adult patients in our unit as from October 2007 under the guidance of the consultants, including the week-ends. There has been no CT SHO cover from Oct 2007. During this period, our unit has treated 4017 cardiac surgical patients with a mortality of 2% and 1852 adult thoracic surgical patients with a mortality of 2.3%. When compared to the pre NP era, there was a higher CITU readmission rate (55% v/s 45%) but a significantly lower mortality for those patients who were re-admitted (4% v/s 18%) while there was no change in the patient Euroscore groups.

Conclusions: NPs form a valuable part of the cardiothoracic team. It seems that they tend to alert the consultant about potential deteriorating patients earlier so that patients are treated prior to significant worsening of their condition. This has resulted in a better re-admission to CICU survival rate.

178 Cardiothoracic Advanced Nurse Practitioners Reduce Readmission to Level 3 Care

Authors: Carol Barlow; G.J. Cooper

Northern General Hospital, United Kingdom

Objectives: In August 2009 we placed a Cardiothoracic Advanced Nurse practitioner (ANP) alongside junior doctors on every shift except for 1 night per week. We have looked at the impact of this change on readmission to level 3 care.

Methods: We identified patients readmitted to level 3 care from ITU records for the calendar years 2007 to 2010. Notes were reviewed.

Results: There was a reduction in readmission to ITU in 2010 (table).

Year	*Readmissions to Level 3 Care*	*% of Total Admisions*
2007	8	0.75
2008	19	1.56
2009	25	2.21
2010	7	0.65

We were unable to demonstrate a reason for this. However, we believe that the constant presence of ANPs on the ward and their greater approachability plays a role. This is shown in the following 2 cases; nursing staff would not have contacted a doctor at the time the patients were first seen by an ANP. Early intervention averted potential readmission to level 3 care. A man who was developing worsening respiratory distress was transferred to level 2 care and impending respiratory arrest was avoided. A patient who was generally unwell with non specific symptoms after redo AVR had a slow tamponade detected early.

Conclusions: Introducing ANPs into ward level care reduces readmission to ITU.

179 Nurse Practitioner or Junior Doctor - Which is Best? A Qualitative Retrospective Review

Authors: Sandra Laidler; R.E. MacFarlane; N.J. Rutherford

Freeman Hospital, United Kingdom

Objectives: This is a retrospective qualitative review of an on going nurse practitioner initiative with in a large cardiothoracic surgical unit. A team of ten nurses were employed, educated and trained 18 months ago to cover the junior doctor role on the cardiothoracic wards and have now effectively replaced those roles, excluding the trainees (CT1&CT2), covering a 24/7 rota.

Methods: A questionnaire was designed for various members of the MDT including pharmacist, physiotherapist, nursing staff, ward sisters, registrars, CT trainees and consultants to enquire into their own experiences since the changeover from junior doctors which occurred in September 2010. This study was designed to establish the effects of the change-over, highlighting the positive and negative aspects from a multi-disciplinary point of view, therefore improving future practice and service provision.

Results: The cardiothoracic MDT was generally supportive of the changeover despite preconceived ideation before going 'live'. Other health care disciplines (other specialities) were not receptive to the role. The effects of change were not fully realised or addressed prior to the changeover which intensified some situations. Role blurring and confusion of professional boundaries and limitation were not fully anticipated.

Conclusions: The original team of Nurse practitioners have been retained. An audit prior to the changeover should have been completed to realistically validate outcomes. Change management strategies were not fully anticipated. Improved quality service provision has been highlighted, with improved response times and a timely efficient service. Unrealistic expectations from the cardiothoracic team should have been addressed at an earlier stage as restrictions are applied to nurses and not junior doctors. Financial benefits have yet to be quantified but cuts have been made with retention, less recruitment fees, no locum doctor fees, and cost effective prescribing.

180 Opening Chests and Minds

Authors: L.S. Fabb; F. Bhatti

Morriston, Swansea, United Kingdom

Cardiac Staff returned from the 2008 SCTS conference enthusiastic about the CALS course. The course deals with arrest and peri arrest situations following cardiac surgery in accordance European Association of Cardiothoracic Surgery guidelines. Miss Farah Bhatti Consultant Cardiac Surgeon had worked with Joel Dunning and was also keen to run the course in Swansea. In January 2010 a new educator post was created and money was identified; the CALS course was now in sight! Planning proved challenging but in October 2011 the course ran smoothly was very well received. The course attendees included a mix of intensive care nurses, doctors, surgical assistants and resuscitation officers. The faculty was supplemented by the five local consultant cardiac surgeons. The course evaluation showed all staff were more confident post course and many commented on how much they enjoyed the course. Resuscitation officers felt more confident in teaching cardiac staff, as it clarified the guidance for them. The Resuscitation council dedicates a chapter to Human Factors in the 2010 ALS manual. Holding courses such as CALS locally, and including all members of the multi disciplinary team, is advantageous not only in terms of the skills learned, but also for the invaluable team building opportunities.

181 Mini-Videoclips About Endoscopic Vein Harvesting - Details May Be Crucial For Uncomplicated Harvesting

Authors: Devdas Thomas Inderbitzin; B. Winkler; P. Matt; M. Grapow; F. Rueter; O. Reuthebuch; F.S. Eckstein

Clinic for Cardiac Surgery Basel-Bern, University Hospital Basel, Switzerland

Endoscopic saphenous vein harvesting (ESVH) for coronary arterial bypass grafting (CABG) is still under debate due to potential vessel wall injury by endoscopic instruments with subsequently decreased long-term graft patency. Hence, an uncomplicated and gentle harvesting technique might improve venous graft quality for CABG. Based on the experience of more than 1000 cases of endoscopic vein harvesting (using the ClearGlide® System of Sorin, Italy), a concise selection of short power-point animated and commented short video clips on general aspects, crucial details, pitfalls and errors in ESVH shall address both beginners and experienced harvesters leading to exchange of practical knowledge and to a better performance.

182 Radial Artery Harvesting - What can go Wrong?

Authors: Jonathan Broughton; S. Kendall; T. Tiyenga; J. Ferguson

James Cook University Hospital, United Kingdom

Modern day coronary revascularization surgery uses a combination of arterial and venous vessels for use as conduits. The internal mammary artery and saphenous vein graft have become popular as a conduit however the radial artery has not always been popular due to fears of poor patency rates. However since the issues of spasm have been aggressively addressed using vasodilatation, and documented good results in the late eighties and early nineties the use of the radial artery has become a viable conduit for coronary artery surgery again. There can be some potential complications of radial artery harvesting and there is some documented cases of anatomical variation of the median nerve. Here we summarise all reported cases of radial artery harvest complication including haematoma, neurological complications, and reduction in thumb strength. We review the normal anatomy of the radial artery and include all anatomical variations of the radial artery and surrounding structures such as persistent median artery and variations in the course of the median nerve. We also include our own experience of inadvertent removal of the median nerve instead of the radial artery by two experienced medical colleagues.

183 Development of a Left Heart Bypass Circuit for Patients Requiring Thoracoabdominal Aneurysm Repair: Perspectives from the Perfusionist Department

Authors: K. Day; M. Field; M. Kuduvalli; M. Desmond; A. Oo; P. Ashcroft

Liverpool Heart and Chest Hospital, United Kingdom

Objectives: Surgery for repair of thoracoabdominal aortic aneurysms carries significant risk of paraplegia. A number of adjuncts have been described to reduce this risk including: left heart bypass/distal perfusion, sequential clamping, intercostal reimplantation, CSF drainage and monitoring of evoked potentials. Circuitry for left heart bypass has traditionally included provision of a reservoir requiring full heparinisation and consequent pulmonary complications. This work describes development of a circuit and approach to cell salvage and volume management which avoids full heparinisation.

Methods: We have reviewed our thoracoabdominal aortic aneurysm practice from September 1998 to March 2011 and described the changes in perfusion practices, cell salvage mechanisms and volume management. Case scenarios will be discussed.

Results: Our traditional circuits for left heart bypass included provision for any eventuality from simple shunt to cardiopulmonary bypass and required full heparinisation. We have altered our approach to left heart bypass with the aim of reducing heparinisation. Our circuits now do not include a functioning reservoir and act as simple shunts. A heat exchanger and options for additional visceral perfusion lines are included. ACTs are run between 250 and 300. Cell savers are used for scavenging using Acid Citrate Dextrose Solution A to further reduce requirements for heparin. Fully bonded circuits are also employed. Volume control is managed in close collaboration between perfusion, anaesthesia and surgeon using a rapid infuser and shunt regulation.

Conclusions: Changes to bypass circuitry, cell salvage and a team approach to volume control allows for low dose heparinisation of patients undergoing thoracoabdominal aortic surgery.

184 The Cardiac Surgical Care Practitioner: An Evaluation of Surgical Site Infections in the Leg

Authors: David McCormack; C. Tennyson; P. Lohrmann; P. Vulliamy

The London Chest Hospital, United Kingdom

Objectives: The role of the surgical care practitioner (SCP) in cardiac surgery has gained widespread acceptance. However, evidence of their equivalence to medically qualified surgeons (MQS) is limited and confined to the general surgical literature. Equivalence in harvesting of the long saphenous vein has not been demonstrated. We sought to evaluate the prevalence of surgical site infections (SSI) in procedures performed by SCPs compared to MQSs.

Methods: All patients undergoing open harvesting of the long saphenous vein between June 2010 and November 2011 at a central London cardiac unit were included. Patients were prepared for surgery and given prophylactic antibiotics as per standardised unit policy. SSI was defined as per NICE guidelines. All wounds were evaluated on a daily basis by surgical registrars and senior surgical nursing staff and details recorded prospectively. We examined the prevalence of wound infections in two consecutive periods (June 2010 to April 2011 and May 2011 to November 2011) and compared SCP and MQS outcomes. In the initial period the units SCPs were undergoing training. The Fisher Exact test was used to compare groups.

Results: 696 patients were included in this study (mean age: 74 years). Thirty-five percent were diabetic This and other comorbidities were similar between groups. In total 23 SSIs occurred from 775 leg harvest sites (3 requiring VAC drainage). The breakdown SSIs is described in table 1.

	June 2010 - April 2011 *No of infections/No of wounds (%)*		*May 2011 - November 2011* *No of infections/No of wounds (%)*	
SCP	14/323	(4.3%)	1/139	(0.7%)
MQS	4/181	(2.2%)	4/132	(3.0%)

Conclusions: The prevalence of leg wound SSI in our study compared favourably to that published in the literature. The SCP group had a significant decrease in leg wound infections in the later time period ($p<0.05$). Between May 2011 and November 2011 the rate of wound infection was equivalent in procedures performed by SCPs and MQSs. Further work is required to evaluate the quality of conduit harvested.

185 Does CT Accurately Predict Whether Lung Fissures are Complete or Fused at Operation?

Authors: K. Nowak; O. Lazoura; W. Karenovics; M. Dusmet; S. Padley; S.J. Jordan

Royal Brompton and Harefield NHS Trust, United Kingdom

Objectives: An understanding of the presence or absence of lung fissures assists in the planning of surgical and bronchoscopic lung volume reduction surgery and helps predict the ease of VATS anatomical lung resection. We compare the radiological assessment of the anatomy of the lung fissures to the actual intra-operative findings.

Methods: 60 patients (31 male) undergoing open or VATS procedures (29 right sided) were included prospectively in this study. The fissures were assessed for completeness (ie. open and lacking adhesions). The oblique fissures were assessed at 3 points (front, middle, back) and horizontal fissures at 2 points (medial, lateral) At each of these points the fissure was graded as complete (open to pulmonary artery), partial or completely fused. Radiological and intra-operative assessments were compared at each point.

Results: CT assessment is fairly poor overall at predicting complete (open) fissures (sensitivity 89% and specificity 32%). The negative predictive value of 80%, however, suggest that CT is good at predicting difficult (fused) fissures.

Conclusions: CT scans significantly overestimated the existence of a complete (open) fissure, probably because of adhesion development with age. Prediction of surgically difficult (fused) fissures is more accurate.

186 Does Routie Preoperative PET CT Scan for Lung Cancer Influence Long Term Survival?

Authors: V. Srivastava; M. Hassan; S. Rogers; M.N. Bittar; A.J. Duncan; J. Zacharias

Victoria Hospital, Blackpool, United Kingdom

Objectives: Since the wider availability of PET CT, it has been considered as a routine investigation to aid selection of candidates for lung cancer surgery. However, it does involve some delay and also an additional cost over and above a conventional CT chest. We sought to investigate if adding a PET CT resulted in improved survival in operated patients.

Methods: All patients considered for lung cancer resection at our institute routinely undergo a PET CT Scan. The institutional database was interrogated to identify patients undergoing some form of resection for lung cancer between April 2005 and April 2008. Their final pathological staging was confirmed and the patients were staged accordingly. A tracing service was used to identify late deaths at the point of study i.e Oct. 2011 and their 5-year survival was compared to the data published by the International Association for the Study of Lung Cancer Group.

Results: 135 patients underwent a variety of surgical procedures during this period including lobectomy or bilobectomy (n=101, 74.8%), pneumonectomy (n=19, 14.1%) and sub-lobar lung resection or wedge resection (n=15, 11.1%). Mean age was 64.9 ± 9.8 years. Females constituted 49.6 % (n=67). 93 patients were proven to be in pathological Stage I while 26 patients were in pathological Stage II, 11 patients in pathological Stage III and 5 patients in pathological Stage IV. There were no in-hospital deaths. There were 65 late deaths. Kaplan-Meier analysis gave a stage wise 5-yr survival as following (with comparable IASLC data in brackets) - Stage 1a- 64.2% (73%), 1b - 56% (58%), 2a - 50% (46%), 2b - 37% (36%), 3a - 37.5% (24%), 4 - < 20% (13%).

Conclusions: Despite a 100% preoperative PET scan use, in our small series, results do not show an improved survival and PET did not appear to have a positive influence. However this may need validation in a larger series possibly including the UK national database.

Lung Cancer stage	*5-yr survival (study)*	*5*
IA	64.2%	73%
IB	56%	58%
IIA	50%	46%
IIB	37%	36%
IIIA	37.5%	24%
IV	< 20%	13%

187 The impact of Pre-Operative Pulmonary Physiotherapy in Thoracic Surgery

Authors: G. Thomas; S. Jones; I.R.A. Goldsmith

ABM University Health Board, Morriston Hospital, United Kingdom

Objectives: Patients suitable for lung resection with dyspnoea have a higher in-hospital mortality following surgery as predicted by the Thoracoscore. We evaluated the role of pre-operative pulmonary physiotherapy (PPP) in improving pre-operative dyspnoea and reduction in post-operative mortality in such patients.

Methods: From January 2011 until June 2011, we prospectively and sequentially identified patients in our out-patient clinic for lung resection with dyspnoea and recruited them for PPP. Thoracoscores before and after PPP were calculated for all patients. Hospital mortality and the length of hospital stay following surgery were compared between those who received and those who did not receive PPP.

Results: Of the 41 patients (43% males, mean age 65.2 yrs [sd 9.3]) screened, 28 patients (44% males, mean age 63 yrs [sd 9.4 yrs]) received PPP. Their mean Thoracoscores before and after PPP were 3.01% [sd 3%] vs. 1.96% [sd 2%] ($p < 0.05$) respectively. No in-hospital deaths occurred in any patients who did and did not receive PPP. The mean length of hospital stay for those who received PPP was 7.1 days and those who did not receive PPP was 8.5 days.

Conclusions: Our prospective study suggests that in those patients with dyspnoea requiring lung resection, PPP significantly improves the Thoracoscore and may obviate the increased length of hospital stay and in-hospital mortality that may be expected.

188 When Should we not Operate on Patients with Pleural Effusions?

Authors: Vasudev Pai; C.K. Tai; E. Elshaikh; S.K. Kolvekar

Heart Hospital; UCLH, United Kingdom;

Objectives: The aim of this study is to assess causes of death in patients who died in hospital after undergoing VATS drainage of their pleural effusions and assess if they received the appropriate treatment.

Results: 705 patients had VATS and talc pleurodesis. Of these, 52 patients died in hospital and data was available in 40 patients. Most of the patients were above 60 years of age. The commonest causes in these patients included primary lung cancer in 9 patients (22.5%) mesothelioma 2 (5 %); metastatic breast cancer 5 (12.5%) metastatic Gastrointestinal cancer 3 (7.5). Most of the patients were ASA grade 3 and 4. 32 of the 40 patients died from either respiratory failure or progressive organ failure and heart failure. Most of these patients had residual effusions after the procedure or had incomplete lung expansion.

Conclusions: Other studies have shown less mortality (2%) as opposed to 7% in our study. They had more rigorous selection criteria including performance assessment as well as exclusion of trapped lung. An assessment of lung function as well as cardiac function and excluding other causes as well as the above measures would guide in better selection of patients resulting in better outcomes.

189 Enhanced Recovery After Thoracic Surgery: Outcomes of Consecutive Patients Undergoing Lobectomy

Authors: Tim Batchelor; R.N. Wotton; N.J. Rasburn; C.L. Evans; G. Casali; D.G. West; F.J. Collins

Bristol Royal Infirmary, United Kingdom

Objectives: Enhanced Recovery after Surgery (ERAS) is a multi-faceted approach to the care of the elective surgical patient encompassing the entire patient pathway from referral to discharge. It is designed to reduce the inflammatory response to surgery with the aim of achieving a quicker recovery. We have applied the principles of ERAS to all patients undergoing elective thoracic surgery.

Methods: Historically, in our institution the median length of stay for patients undergoing lobectomy has been 7 days. The principles of ERAS were adopted in April 2011. Key components included comprehensive pre-assessment and day of surgery admission, patient engagement and education, carbohydrate loading, standardisation of regional and post-operative analgesia, minimally-invasive surgery, and early nutrition and mobilisation. We retrospectively reviewed all patients undergoing lobectomy (excluding bi-lobectomy and chest wall resection) during the first 8 months of the programme.

Results: 93 patients underwent lobectomy of which 27 (29%) were performed VATS. 44 patients were male and the mean age was 69.8 (range 26-87). There were 3 deaths. Of the remaining 90 patients the median length of stay was 5 days (IQR 4-6). The median length of stay for an open lobectomy was 5 days (IQR 4-7) and for a VATS lobectomy was 3 days (IQR 3-5) ($p=0.001$). The only predictors of a length of stay of greater than 5 days were age ($p=0.0001$) and more than one chest drain ($p=0.006$).

Conclusions: ERAS is a quality initiative that can be successfully applied to patients undergoing thoracic surgery. The efficiencies realised by this process result in a reduced length of stay for all patients undergoing lobectomy. Furthermore, this reduction in length of stay is particularly marked if a VATS lobectomy is performed within an enhanced recovery programme

190 Enhanced Recovery After Pulmonary Surgery Protocols Help Reduce use of Resources Without Compromising Outcomes

Authors: L. Creedon; M. Hagan; L. Socci; E. Internullo; D. Raffle; A.E. Martin-Ucar

Nottingham University Hospitals NHS Trust, United Kingdom

Objectives: To determine the impact of a recently developed Enhanced Recovery After Surgery (ERAS) protocol in postoperative outcomes and use of resources after pulmonary surgery.

Methods: A comparison between two groups were made. Group 2011: 37 consecutive patients [20 female and 17 male, median age 68 (range 31-85) years] undergoing non-pneumonectomy pulmonary surgery under one Consultant over 4 months since ERAS started in July 2011. Group 2010: 33 consecutive patients [15 female and 18 male, median age 70 (range 39-85) years] undergoing non-pneumonectomy pulmonary surgery under the same Consultant over 4 months since July 2010. Both Groups had similar median FEV1 and Thoracoscore: 78% (38-126) and 2 (0.26-6.30) in 2011 Group vs 80% (40-143) and 2.25 (0.38-4.11) in Group 2010.

	Group 2010	*Group 2011*	*p*
Hospital Stay	7 (1-32) days	6 (1-26) days	0.03
Number CXR 7 (2-29)	4 (2-27)	0.001	
Number blood tests	5 (1-32)	3 (0-57)	0.01
ITU admission	12%	19%	ns

Results: There was only one death in the 2010 Group and none in 2011. One patient was readmitted within 30 days in Group 2011. There was a signifficant reduction in Postoperative stay, number of CXR performed after surgery and number of blood tests during the postoperative period in the Group 2011.

Conclusions: With the development of clear protocols of care and all the initiatives included in an ERAS program there is scope for reduction in the use of resources without compromising outcomes.

191 Troponin-I Changes After Thoracic Surgery and its Lack of Association With Clinical Evidence of Myocardial Injury

Authors: Mustafa Zakkar; M. Kovzel; C. Tan; I. Hunt

St. George's Hospital, United Kingdom

Objectives: The incidence of post operative myocardial injury is not well stratified in thoracic surgery. It is difficult to establish a diagnosis of postoperative myocardial infarction using classical clinical methods such as pain. Troponin-I is known not to be altered in routine non-cardiac procedures making it the marker of choice in these patients.

Methods: We studied Troponin changes in patients undergoing thoracic surgery over a period of six weeks. 70 patients under went thoracic surgery by two consultants. We measured Troponin preoperatively and on day one post operation (with 0.04µg/l as upper value for normal). All patients had ECG done preoperatively and on day one.

Results: We noted that there was increase in the average Troponin levels (0.19) at day one in 16 patients (23.2%) compared to (0.021) in the remaining 53 (76.8%) of patients . In this group 3 patients had VATS pleural biopsy and Talc (18.75%), 8 patients underwent lobectomy (4 VATS) (50%), 2patients had L- Pneumenectomy (12.5%), 1patients underwent open decortication (6.25%), 1 patient underwent VATS for empyema debridement, and 1 patient had VATS wedge resection (6.25%). Analysis of the patients who underwent lung resection revealed significant correlation between Troponin and the procedure. 100% of pneumonectomy patients (n=2) had significant Troponin changes in day one. 50% of the patient who under went lobecotmies had significant Troponin rise (n=8). VATS lobectomy did not seem to have any significant effect on the levels of Trop rise in the group who had abnormal postoperative Trop levels. No patients suffered significant intra-operative complications, required blood transfusion, inotropic or ventilatory support or needed an ICU admission post surgery, and 30 day mortality was 0%.

Conclusions: Troponin-I can be elevated in significant number of patient after thoracic surgery. Many patients after thoracic surgery may have Troponin changes with no other symptoms of myocardial injury.

192 Timing of Chest X-ray Following Thorascopic Sympathectomy can Avoid Unnecessary Drain Placement and Radiation Exposure

Authors: Beattie; R. M. Jones

Royal Victoria Hospital, United Kingdom

Objectives: Carbon dioxide (CO2) insufflation is used during thoracoscopic sympathectomy to optimise surgical view. The solubility of CO2 allows it to be quickly absorbed, but the lag time means that early chest x-ray (CXR) may result in unnecessary interventions to the patient, including further radiation and chest drainage.

Methods: The regional thoracic surgery database was interrogated comparing the time from leaving theatre to the first post operative chest film. This was reviewed for a pneumothorax, and subsequent films were reviewed for resolution of the pneumothorax, placement of an underwaterseal drain and for the total number of CXRs during that admission.

Results: One hundred and seventy patients were identified with median age of 27years. 65% were female and 25% were smokers. The most common diagnoses were hyperhydrosis axillaris and palmaris comprising 87% of the patients. There were no tension pneumothoraces, no haemothoraces, no conversions to an open procedure but one chylothorax. 40 patients (23.5%) had a pneumothorax identified and 25% received a drain. The median number of CXRs post operatively was 1 (range1-18). If the CXR was taken in the first hour postop the chance of diagnosing a pneumothorax was 6.5%, this fell to 2.9% the subsequent 2 hours to 1.8% by the 5th postop hour. If a pneumothorax was diagnosed in the first two hours, 31% of these patients received a chest drain. If the diagnosis was made after two hours, only 20% of this group received a drain.

Conclusions: Taking a CXR within two hours post op is associated with a higher diagnosis of pneumothorax and subsequent drainage. Leaving the CXR until the 5th post operative hour is safe, it reduces the risk of diagnosing a carbon dioxide pneumothorax and subsequent drain insertion, yet still identifies pneumothoraces that may require treatment.

193 Is a Progressive Care Unit the Future in Thoracic Surgery?

Authors: Mandy Mckee; L. Bell

Royal Victoria Hospital, United Kingdom

Objectives: Patients who require complex lung or oesophageal surgery require intensive post-operative management. In 2006 this care was delivered in the Trust in a HDU or ICU setting. Due to other demands on these beds, patients often had their surgery delayed. In order to address this need two Progressive Care Unit (PCU) beds were identified to prevent delays in treatment plans. In August 2006 following a needs specific education programme these PCU beds were opened. To provide direct access to post-op beds for patients with oesophageal and lung cancer. To reduce cancellations, a fast track service was provided for patients in ward-based PCU beds. To provide this care with highly trained professional ward staff.

Methods: 1. Education: To introduce PCU Beds into the thoracic ward, a six week education experiential learning programme was commenced. This was initially for a core group of senior staff and then rolled out to everyone. 2. Identification of resources: - this was supported by management and the Cardiac Clinical Educator. Staff had placements on a Cardiac High Dependency Unit to develop their clinical skills. The first PCU beds were opened on September 2006.

Results: This service has been in operation for five years. Cancellations for patients with oesophageal and lung cancer who require a PCU bed are zero percent. All thoracic staff are highly skilled in caring for these patients who would have previously been cancelled if an ICU/HDU bed was not available.

Conclusions: The government and Trust's agenda to ensure the provision of high quality post-op care for cancer patients has now been provided by a dedicated team of highly skilled staff in a thoracic ward-based PCU unit. This has reduced the pressure on ICU and resulted in huge improvements in the efficiency and effectiveness of thoracic surgery service.

194 Does Explorative Thoracotomy for Non-Small Cell Lung Cancer Adversely Affect Patients's Outcome Postoperatively?

Authors: A. Alzetani; J. Rigby; A. Lea; S. Ghosh

University Hospital North Staffs NHS Trust, United Kingdom

Objectives: Surgical resection for lung cancer improves survival and the chance of cure. In some cases the disease is so advanced that a complete and safe resection cannot be achieved. Patients are referred for adjuvant or palliative treatment thereafter. We would like to review our practice to determine our incidence of explorative thoracotomy and its influence on the further management of patients & their survival.

Methods: A retrospective review of patients referred for surgery for lung cancer over 2.5 years. Clinical data were collected in addition to radiological & pathological staging and the patients' further postoperative management including survival status.

Results: Between Januarys 2008-August 2011 a total of 418 patients underwent a thoracotomy for primary lung cancer, of whom 27 patients (6%) proved to have inoperable disease. Of the inoperable cases, 4 (15%) had a pre-explorative mediastinoscopy and 22 (81%) were investigated with PET studies. Sixteen patients (59%) had radiologicaly-advanced stage (IIIA-). Inoperability was due to stage migration, N2 disease, tumour invasion or poor physiological status intra-operatively. Subsequent treatments included adjuvant (chemotherapy/ radiotherapy /combined) in 16 patients (59%) of which 12 (75%) are still alive with an average length of survival of 9 months.

Conclusions: Explorative thoracotomy is an unavoidable part of any modern thoracic surgical practice and our incidence is well within those reported in the literature. Over half of the patients were still suitable for radical adjuvant treatment and the same percentage survived for an average 9 months post surgery. We conclude that surgery should not be denied for advanced NSCLC to avoid depriving patients the benefit of a curative resection. If a resection cannot be achieved then some patients can still be suitable for adjuvant treatment.

195 Surgical Management of Pleural Empyema in the Very Elderly

Authors: M. Schweigert[1] A. Dubecz[1] R.J. Stadlhuber[1] M. Beron[1] D. Oefner[2] H.J. Stein[1]

1 Department of Thoracic Surgery, Klinikum Nuremberg Nord, Germany; 2 Department of Surgery, Salzburger Landeskrankenhaus, Paracelsus Medical University Salzburg, Austria

Objectives: Parapneumonic pleural empyema is a critical illness with considerable morbidity and mortality. Age is an acknowledged risk factor for both pneumonia and pleural empyema. Furthermore elderly patients often have severe comorbidity. In case of pneumonia and pleural empyema their clinical condition is likely to deteriorate fast what results in life-threatening septic disease. To prevent this disastrous situation we adapted early surgical debridement as primary treatment option even in very elderly patients. This study shows the outcome of surgical managed patients with pleural empyema who are 80 years or older.

Methods: The outcomes of 222 consecutive patients who received surgical therapy for parapneumonic pleural empyema in a German tertiary referral hospital between 2006 and 2010 were reviewed in a retrospective case study. Patients older than 80 years were identified.

Results: There were 158 male and 64 female patients. The median age was 60,4 years. The in-hospital-mortality was altogether 6,75%. 37 of the 222 patients were 80 years or older (80-95). Comorbidity was mainly cardiac including congestive-heart-failure (24/37) and previous cardio-vascular intervention (3/37). A minimal-invasive approach was feasible in 34 cases (92%). 6 reoperations were mandatory. Finally 36 patients recovered while one died from severe sepsis (In-hospital-mortality 2,7%).

Conclusions: Surgical treatment of parapneumonic pleural empyema provides excellent results even in very elderly patients. Despite considerable comorbidity and often delayed diagnosis minimal-invasive surgery was primary feasible in 34 patients (92%). The in-hospital-mortality of very elderly sufferers was low (2,7% versus 6,75%). Therefore we conclude that advanced age is no contraindication for operative management. Preferable minimal-invasive surgical debridement as early as reasonable should be treatment of choice to avoid septic disease.

196 Pulmonary Lobectomy in Octogenarians: A 9 Year Experience in a Single Centre

Authors: Louise Kenny; B. Nyawo; S. Stamenkovic; S. Barnard; S. Clark; G. Sarwar; J. Forty

Freeman Hospital, United Kingdom

Objectives: With an ageing population, clinicians are increasingly faced with octogenarians with resectable lung cancers. We reviewed our experience of octogenarians undergoing lobectomy over 9 years to determine complications and outcomes within this age group.

Methods: A retrospective analysis of 35 octogenarians undergoing lobectomies from 2003-11 was performed. 30-day mortality and long term survival data was evaluated for 35 patients. Data describing post-operative complications and hospital stay were available for 33 patients.

Results: Mean age was 82.3years (range 80-88). Increasing annual activity is shown on the following table.

Year	*No of resections*
2003	1
2004	0
2005	1
2006	3
2007	2
2008	4
2009	9
2010	5
2011	10

Mean hospital stay was 15.6 days (SEM 1.95) with 5.5 days (SEM 1.13) in HDU. 36.4% required readmission to HDU due to complications. Major respiratory morbidity, defined as suction bronchoscopy, tracheostomy, or ventilatory support was 42.4%. 52.9% of patients had post-operative pneumonia, of which 58.8% were readmitted to HDU ($p=0.01$). Incidence of minor post-operative complications were as follows: 57.5% delirium; 21.2% chest infection; 21.2% air-leak < 7days; 30.3% treatable arrhythmia; 18.1% UTI; 9.1% wound infection. In hospital mortality was 5.6% (n=2) Of those alive on discharge 70.7% returned to their own homes; with 28.1% requiring increased social support. 29.3% were discharged to another healthcare provider for respite care or ongoing medical needs. Long term survival was 71.4% over 9yrs.

Conclusions: With increasing life expectancy more octogenarians are undergoing pulmonary resections. Post-operative pneumonia is common and significantly increases readmission to higher level care. Our results are comparable with other published series and demonstrate that these patients can have resections with an acceptable short and long term survival.

197 Is Lobectomy for Non Small Cell Lung Cancer (NSCLC) Worth the Risk in Octogenarians? A Case Control Study

Authors: M. Scarci; T. Routledge; J. King; L. Lang-Lazdunski; K. Harrison-Phipps; J.E. Pilling

Guys Hospital, United Kingdom

Objectives: There are increasing requests for surgical resection of NSCLC in octogenarians, this may be excessively dangerous for the survival gained.

Methods: Review of 695 consecutive patients undergoing lobectomy for NSCLC between January 2006 and December 2010. Octogenarians were identified and a younger control matched for incision, lobe resected, histology, stage and sex. Pre operative fitness, hospital course and survival were compared.

Results: 59 consecutive octogenarians [38 male, median age 81 years (range 80 - 88)] undergoing lobectomy via thoracotomy (46) or VATS (13) for NSCLC. Controls: median age 65 years (range 34 -79)] matched for. In the first three years of the study octogenarians comprised 6.1%; 5.6% and 2.5% of lobectomies; in the last two years 14.6% and 13.3% (p=0.004). Co morbidities showed a trend to higher frequency in the control group 47 % [13 cardiovascular (CV); 15 non-CV] compared to 34% in the octogenarian group [16 CV; 4 non-CV] p=0.18. Lung function was significantly poorer in the controls (table). There were no in hospital deaths in either group. Post op complications [14 (24%) octogenarians vs 15 (25%) controls], unplanned critical care admission was [5 (8.5%) octogenarians vs 3 (5.1%) controls] and length of stay (table) were similar in the two groups. In the octogenarian group histology revealed; 22 adeno, 35 squamous and two non-small cell carcinomas. Pathological staging was IA 14, IB 30, IIA 2, IIB 8, IIIA 5. Ten octogenarians died after a median 156 days (range 22 - 762), median follow up for survivors 602 days. Eleven controls have died after a median 711 days (range170 - 1514), median follow up for survivors being 826 days. Overall post operative survival was similar (p=0.8 Log rank).

Conclusions: Lobectomy for NSCLC in selected octogenarians is feasible without excess morbidity or mortality. Post operative survival justifies an aggressive surgical approach.

	Octogenarians		*Controls*		*p*
	Median	*Range*	*Median*	*Range*	
FEV1 (L)	1.88	0.9 - 3.3	1.9	0.9 - 3.4	0.1
FEV1 % Predicted	93	47 - 136	77	37 - 126	0.01
TLCO % Predicted	71	42 - 118	64	30 - 87	0.02
Hospital Stay (days)	8	5 - 97	7	3 - 67	0.07

198 Repair of Pectus Excavatum Does not Improve Early Chest Wall Function

Authors: U.B.V. Naidu[1] A. Aliverti[2] A.F. Motta[2] S. Moriconi[2] N.J. Acosta Canon[3] K. Parker[1] V. Raja[3] P.B. Rajesh[1]

1 Heart of England NHS Foundation Trust, United Kingdom; 2 Politecnico di Milano, Italy; 3 University of Warwick, United Kingdom

Objectives: In patients undergoing corrective surgery for pectus excavatum there is evidence of improvement in cardiopulmonary function. It is unclear how much of this improvement is attributable to improved chest wall function. Thus we observed the changes in chest wall function in response to an incremental load exercise before and after surgery.

Methods: Using Optoelectronic Plethysmography (OEP), total and regional chest wall volumes were measured in 7 male patients (aged 17 to 24) with severe pectus excavatum (mean haller index 5,4) who underwent a Nuss correction. OEP rib cage and abdominal volumes were recorded at rest, during exercise (incremental cycle ergometry), and during the immediate recovery period. Spirometry data was also collected before and after surgery.

Results: Tidal volume increases during exercise were blunted compared to baseline measurements at six days partially recovering six weeks postoperatively (table). This is mirrored by changes in spirometry. The recovery at six weeks corresponds to a increase 16 (10) % in tidal volume contribution from abdominal compartment of ventilation. Minute ventilation returns to baseline by 6 weeks (74 (20) to 69 (19) l/min) as a result of increased respiratory rate (31 (7) to 35 (9) breaths/min) despite reduced tidal volume.

Conclusions: Six weeks after Nuss correction in Pectus patients there is a decrease in rib cage mobility and a mechanism of compensation involving abdominal and diaphragm contribution to chest wall motion . The longer term effects on chest wall function are yet to be defined.

Percentage drop (SD) from pre to post operative surgery

	6 days	*6 weeks*
Tidal volume during max exercise	36 (7)	15 (17)
FEV1	40 (13)	16 (20)
FVC	42 (14)	17 (21)

199 Has the National Cancer Control Program for Lung Cancer Influenced the Pathological Stage of Lung Resection?

Authors: David Healy; A. Raza; C. Redmond; M. Tolan

Dublin Academic Medical Centre, Ireland

Objectives: Rapid access lung clinics (RALC) were established under the recently introduced Irish National Cancer Control Program (NCCP) with the aim of identifying primary lung cancer at an earlier stage to increase the proportion of candidates who would be suitable for curative surgical resection. The objective of this study is to evaluate the impact of RALC at this institution on 1] Tumour size and 2] Pathological stage (TNM 7th edition).

Methods: A review was performed of the tumour size and pathological stage in patients undergoing surgical resection in two groups Group 1 NCCP: Patients undergoing surgical resection in the first 2 years since the introduction of the RALC on the 8th of June 2009 (N=67). Group 2 Pre-NCCP: Patients who underwent lung resection in the 2 years prior to the introduction of the RALC (N=58). Statistical analysis was performed with a Chi-squared test or t-test as appropriate.

Results: T size: The mean tumour size in the Pre-NCCP group was 4.2cm (±2.9), compared with 3.7cm (±2.5) in the NCCP group (P=0.31). TNM stage: 47% of patients in the Pre-NCCP group had stage I disease compared with 63% in the NCCP group. 53% of patients in the Pre-NCCP group had stage II or above disease, compared with 37% in the NCCP group (P=0.05).

Conclusions: There is a trend to reduced tumour size in the NCCP group. There is a significant increase in the proportion of stage I disease in the NCCP group. This suggests that there has been a positive impact from the development of a National Cancer Control Program for lung cancer which may have an impact on survival.

200 Functional imaging in aortic aneurysms: Determining the biological correlates of Positon emission tomography tracer (18F-FDG) in aortic aneurysms.

R.Q. Attia[1] A. Smith[1] A.S. Patel[1] C.P. Young[2] V.N. Bapat[2] P. Taylor[1] M. Waltham[1]

1 Kings College London BHF Centre of Excellence and NIHR Biomedical Research Centre at King's Health P, United Kingdom; 2 Department of Cardiovascular Surgery, Guy's and St Thomas' Hospital, United Kingdom

Objectives: Uptake of (18F-FDG) on PET-CT has been associated with aneurysm expansion and development of acute aortic syndrome. Inflammatory cell activity is important in aneurysmal disease. The aim of the study was to determine whether there was an association between 18F-FDG uptake and inflammatory/immune cell content of the aneurysm wall.

Methods: Six patients underwent aortic PET-CT. The images were segmented to generate high affinity 3D aortic reconstructions. These reconstructions were used to generate bespoke patient specific aortic masks to match aortic morphology using laser scintigraphy. These models allowed aortic biopsies to be taken during open aneurysm repair from sites of known 18F-FDG uptake values as determined by the SUVmax. Aortic biopsies were mechanically and enzymatically dissociated and cells phenotyped according to their expression of CD45, CD3, CD19, CD56, CD68, CD16 and HLA-DR using flow cytometry.

Results: Fifty-two biopsy samples were obtained from ascending aortic (TAA n=3), TAA and arch (n=1) and abdominal aortic aneurysms (AAA n=2). Maximal TAA diameter was 6.5cm and AAA 8.5cm. The mean age of all patients was 65.5 (35-77years). There was a significant positive correlation between 18F-FDG uptake and total leukocyte content $p<0.0001$. Of the leukocyte sub-populations analysed increased numbers of tissue resident B cells ($p<0.0001$), T cells ($p<0.0001$) and Natural Killer cells ($p=0.001$) but not macrophages (p0.283) were significantly correlated to increased F18-FDG uptake.

Conclusions: This study provides highly accurate and anatomically specific biological correlates to 18F-FDG uptake in aneurysmal aortic wall, in particular the immune cell content. We will further investigate the influence of these cell populations and their activity on the behaviour of aneurysms.

201 Subspecialisation of Aortic Surgery Improves Outcome Following Acute Type a Aortic Dissection

Authors: D. Harrington; M. Field; M. Kuduvalli; A. Oo

Liverpool Heart and Chest Hospital, United Kingdom;

Objectives: Surgery for Acute Type A Aortic Dissection (ATAAD) remains associated with a high mortality rate, with most surgeons only rarely performing such cases. Our centre was the first unit in the country to implement a sub-specialised aortic on call rota.

Methods: We performed a retrospective analysis of our aortic dissection database from October 1998 to November 2011. Prior to September 2007 repair of ATAAD was performed by 10 surgeons on a general cardiac on call rota. Since then, repairs have been performed by a team of 3 surgeons who also undertake the majority of elective aortic surgery

Results: There were no differences between the groups in terms of mean logistic Euroscore. 81 patients underwent repair of ATAAD prior to September 2007, with 24 deaths (29.6%). Since introduction of the sub-specialized rota, 47 patients have undergone repair with 5 deaths (10.6%) (p=0.024). Post-operative strokes were fewer in the later cohort (16.1% vs 6.4%), although this was not statistically significant (p=0.11). There were no differences in length of stay (p=0.19).

Conclusions: Subspecialisation of emergency acute aortic dissection repair by surgeons who regularly perform elective aortic surgery has led to a significant improvement in mortality rates in our centre.

202 External Aortic Root Support Avoids Myocardial Ischaemia and Embolic Risk and Minimises Cardiopulmonary Bypass and Blood Product Requirements

Authors: Tom Treasure[1] S. Crowe[1] B. Lees[2] K.M.J. Chan[2] A.M. Ranasinghe[3] R. Attia[4] T. Golesworthy[5] J. Pepper[2]

1 Clinical Operational Research Unit UCL, United Kingdom; 2 Royal Brompton Hospital and Imperial College London, United Kingdom; 3 University of Birmingham, School of Clinical and Experimental Medicine and University Hospitals Birmingham, United Kingdom; 4 Guy's and St Thomas' Hospitals, United Kingdom; 5 Exstent Ltd, Tewkesbury, United Kingdom

Objectives: A NICE technology appraisal considered external aortic root support (EARS) to be an alternative to aortic root replacement (ARR) in Marfan syndrome. To date all 30 patients who have had this surgery are alive and well following EARS surgery. This offers a reduction in the magnitude and risk of the surgical intervention, benefits we sought to quantify in a comparative evaluation.

Methods: From May 2004 to December 2009 a pliant, custom-made support, engineered with computer aided design was implanted in the first 20 patients. Patients having ARR for Marfan syndrome, in the same time frame, in two other cardiac surgical units, were identified. Without reference to any procedural or outcome data, a group matched by minimisation for age, aortic size and valve function was identified from amongst these patients. Data were then retrieved for bypass and ischaemic time, blood loss, and transfusion of blood products.

Results: The degree of matching of ARR and EARS patients is shown in the table. Of 20 ARR patients 16 had valve-sparing surgery and 4 had composite grafts. The operation, bypass and ischaemic times were as shown. Only the first EARS patient had a precautionary 20 minutes of bypass. A difference in blood loss commensurate with shorter operating times and the avoidanced of bypass is recorded. One EARS patient received blood transfusion. Data on blood product usage in 18/20 ARR patients is shown.

	Aortic Root Replacement	*External aortic root support*
Age in years: median (IQR)	35 (27-43)	33 (26-39)
Aortic root diameter mm: median (IQR)	48.5 (44-52)	47 (43-48)
Operation time mins: median (IQR)	240 (204-269)	148 (136-163)
Bypass time mins: median (IQR)	134 (117-146)	0 (0-0)
Cross clamp time mins: (median IQR)	114 (91-127)	0 (0-0)
Blood lost mls in 1st 4 hours: (median IQR)	230 (155-370)	50 (50-100)
Red cell transfusion: (patients)	9/18	1/20
Platelet transfusion: (patients)	9/18	0/20
Fresh frozen plasma: (patients)	12/18	0/20

Conclusions: As surgery is offered earlier in the course of aortic dilatation, the statistic "number needed to treat" to prevent a dissection increases. An essential component in evaluation is quantification of the harm and cost for each intervention as NNtT increases. This study offers comparable data including variability for EARS and ARR appropriate for decision making and health economic evaluation. Hypothesis testing statistical tests were not appropriate because the differences in operating procedures were by intent rather than a research finding.

203 Hybrid Two Stage Treatment of Extensive De Bakey Type I Acute Aortic Dissections: Mid-Term Results of the Lupiae Technique

Authors: G. Cappabianca; N. Gallo; E. Pestrichella; G. Contegiacomo; G. Esposito

Humanitas Gavazzeni Hospital, Italy

Objective: The late persistence of a patent and dilated false lumen into the thoracic aorta is associated to higher re-operation rates and to a worse prognosis after the surgical repair of De Bakey Type I acute aortic dissections (TIAAD). We present the mid-term results of a hybrid, two stages technique for TIAAD aimed to reduce the risk of late expansion of the residual false lumen.

Methods: From May 2005 to January 2011, 49 patients with TIAAD were treated with the "Lupiae" technique. During the emergency operation, the Vascutek "Lupiae", a multi-branched Dacron prosthesis, was implanted to replace the ascending aorta, the aortic arch and to reroute the origin of the epiaortic vessels. The debranching of the aortic arch creates a long and stable Dacron landing zone on the ascending aorta suitable for further endovascular interventions. Postoperatively, 34 patients with a patent or partially thrombosed false lumen > 22 mm or a diameter of the descending aorta > 46 mm underwent the implant endovascular stentgrafts into the descending aorta.

Results: Three patients died after the first procedure. One patient died after the endovascular stage. No patient experienced paraplegia or stroke. The 6-year follow-up survival was 90±4%. The obliteration of the false lumen was obtained in 94% of the patients.

Conclusions: In patients with TIAAD the debranching of the aortic arch with the Lupiae technique can be safely performed. This technique creates a long and stable landing zone that can be easily used for the deployment of endovascular stentgrafts in case of distal false lumen expansion.

204 High Volume Practice and Regular Follow-Up Reduces Mortality and Morbidity of Elective / Urgent Aortic Root Replacement

Authors: G.K.R. Soppa; J.Y. Afoke; J.P. van Besouw; M. Jahangiri

St. George's Hospital, United Kingdom

Objectives: Non-emergency, aortic root replacement (ARR) results in significant morbidity and mortality (8-12%) according to the 6th 'Blue Book' 2008. High volume experience and close follow-up can reduce complication rate and improve outcomes. Aim: To assess the outcomes of patients undergoing elective/urgent ARR by a single, high volume surgical team.

Methods: Patients undergoing non-emergency, elective/urgent ARR for non-Marfan aortic root dilatation, from October 2005 to March 2011, were studied. Valve-preserving procedures, extra-anatomic bypass, arch and descending aortic repairs were excluded. Patient demographics, operative details and post-operative outcomes were collected prospectively. Surgical technique included central cannulation and cardiopulmonary bypass (CPB) at 35°C. Following aneurysm excision, a composite valve-conduit reconstruction with coronary button re-implantation was performed. Tissue glue, Teflon-pledgets and blood products were seldom used. Patients were followed locally at 8 weeks, 6 months and annually thereafter with echocardiography and CT scanning.

Results: From October 2005 to March 2011, 163 ARR were performed. There was one in-hospital death (mortality = 0.6%). There were 131 (80.4%) isolated first time procedures (4 in pregnant women), 6 were redo (3.7%) and in 26 (16%) ARR was combined with other procedures (Table 1). Median age was 63 years (range 19-84). Median cross-clamp and CPB times were 73 (range 69-87) and 86 minutes (range 85-126) respectively. One underwent resternotomy for bleeding, 2 required haemofiltration and there were no strokes. Median hospital stay was 6 days (range 5-11). Median follow-up was 2.9 years (range 6 months-4.3 years) with 100% survival and freedom from re-operation. There were no late distal ascending aorta / arch dilatation.

Conclusions: High volume surgery, minimal use of haemostatic adjuncts and sustained follow-up reduces morbidity and mortality following aortic root replacement.

Type of procedure	*Number*	*Percentage (%)*
Total number of ARR	163	
Isolated first time, ARR	131	80.4
Redo ARR	6	3.7
Combined procedures		
ARR+CABG	15	9.2
ARR+Radiofrequency ablation	6	3.7
ARR+Mitral Valve Repair	3	1.8
ARR+Mitral Valve Replacement	2	1.2

205 CT Coronary Angiography is a Viable Alternative to Coronary Angiography as Investigation of Coronary Status in Elective Aneurysm Surgery

Authors: W.Y. Lim; J. Yap

The Heart, United Kingdom

Objective: Evaluation of the coronary arteries by angiography is routine practise prior to aortic aneurysm surgery. Performing coronary angiography can be technically challenging because of the aneurysm and there is a small but unavoidable risk of causing a dissection. We aimed to investigate whether CT coronary angiography would be a suitable alternative for this subset of patients.

Methods: We reviewed a consecutive 3 year period of patients who underwent elective aortic aneurysm repair by a single operator in a tertiary cardiothoracic centre. All data were extracted from a prospectively collected database (PATS; Dendrite Clinical System Ltd). This included data on demographics, coronary angiography results, CT coronary angiogram results and outcomes.

Results: 81 patients underwent elective aortic aneurysm repair. The mean age was 61.95±14.66 with a male predominance (68.3%). 13.4% had previous cardiac surgery, 67.1% were hypertensive, 48.8% history of smoking and 7.3% diabetic. There was no in-hospital or 30-day mortality. 27 patients had CT coronary angiogram as their main investigation for coronary status. Of this group, only 5 patients required further different modality of imaging. 2 had normal nuclear myocardial perfusion scans and the remaining 3 underwent subsequent coronary angiography of which 2 had concomitant CABG. None of the patients in the CT coronary angiogram group had post-operative myocardial ischaemic events.

Conclusions: CT coronary angiography is an effective tool in excluding coronary disease in patients undergoing elective aortic aneurysm repair. It mitigates the need for invasive coronary angiography without compromising outcome.

206 Experience with the Jotec-Evita Open Plus Hybrid Stent Graft During Arch Surgery

Authors: Mohamad Bashir; M. Field; M. Kuduvalli; A. Oo

Institute of Cardiovascular Medicine & Science (ICMS), Thoracic Aortic Aneurysm Service, Liverpool H, United Kingdom

Objective: Surgery of the arch and proximal descending thoracic aorta often requires a two staged approach. This includes sternotomy and under DHCA, replacement of the arch with elephant trunk and then a staged second operation through the left chest to replace the descending aorta. The E-vita Open Plus hybrid stent graft allows deployment of a stent into the descending aorta at the time of open surgery and DHCA in a single staged approach. Invaginated into the stent is a graft which allows reimplantation of the arch vessels

Methods: We reviewed our prospectively collected database and selected patients having undergone the E-vita Open hybrid stent graft and examined their outcomes.

Results: Between January 2006 & November 2011, 13 patients underwent surgery using the Evita Open hybrid stent graft. In 3 patients, the first generation system was used and subsequent patients were done using the second generation Evita Open Plus system. Indications were aneurysm (9), acute type A aortic dissection (3) & chronic type A dissection (1). The first patient of the series suffered stroke and died. There was no other mortality. 1 patient had a type 1 endoleak.

Conclusions: Use of E-vita hybrid stent graft in selected patients allows for safe single stage management of arch and proximal descending thoracic aortic pathologies.

207 Hybrid Endoprosthesis for Chronic Aortic Dissection and Thoracic Aneurysm: Early Experience with E-Vita Open Plus

Authors: Jean-Philippe Verhoye; V.G. Ruggieri; E. Flécher; M. Harmouche; X. Beneux; J.F. Heautot; D. Boulmier; T. Langanay; H. Corbineau; A. Leguerrier

Rennes University Hospital, France

Objectives: Aortic arch surgery in chronic dissections remains challenging. The ''frozen elephant trunk" technique represents a recent development of the classic elephant trunk technique combining endovascular with conventional surgery. This report describes our early experience with the new hybrid prosthesis E-Vita Open Plus (Jotec Inc, Hechingen, Germany).

Methods: We report eight cases: six presenting a chronic type A aortic dissection over the arch and descending aorta and 2 arch and thoracic aneurysms. The stent graft used was the new "E-vita Open Plus" endoluminal stent graft, consisting of a proximal woven polyester tube and a distal self-expandable nitinol stent graft, which was implanted using the technique of circulatory arrest and moderate hypothermia (26°) with selective antegrade cerebral perfusion (10 ml/kg/min). The stent graft was deployed under visual guidance through the open aortic arch into the true lumen.

Results: Intraoperative antegrade stenting of the descending aorta combined with the aortic arch repair was performed successfully in all patients. After heparin neutralization we obtained a good haemostasis of the soft tube for the aortic arch. First 48 hours postoperative bleeding mean rate was 630 ml. Doppler scan showed postoperatively patency of visceral arteries without any malperfusion. One Brown - Sequard syndrom occurred.

Conclusions: The new E-vita Open Plus hybrid prosthesis combines surgical and interventional technologies and represents a feasible and effective option in the treatment of complex aortic pathologies. Moreover the reduced porosity of the new device allows a more efficient post-operative haemostasis. However long term follow up is required.

208 Surgery for Type A Aortic Dissection - The More I Practice the Luckier I get??

Authors: A. Bryan; P. Narayan; B. Reeves

Bristol Royal Infirmary, United Kingdom

Objectives: Controversy remains whether surgical outcomes for type A aortic dissection have actually improved in current era. There is little information with respect to changes in outcome within a single surgeon's practice over time.

Methods: A consecutive series of 84 patients representing the practice of a single cardiac surgeon were studied by dividing the experience into 2 equal time periods of 9 years, 'early' from 1993 to 2002 and 'late', from 2002 to 2011. The surgical strategy throughout was consistent with respect to the proximal reconstruction first and an open distal anastomosis with excision of the intimal tear. In the early period, femoral cannulation, deep hypothermic circulatory arrest supplemented by retrograde cerebral perfusion was the predominant neuroprotective strategy. In the later period axillary cannulation with selective cerebral perfusion was the dominant strategy.

Results: Mortality fell from 20% (8/41) in the early cohort to 9% (4/43) in the later cohort (risk ratio 0.48, 95% confidence interval 0.16 to 1.46, p=0.18). During this period Aortic valve conservation increased from 61% (25/41) to 75% (29/39) (risk ratio 1.22, 95% confidence interval 0.90 to 1.66, p=0.20) and Aortic arch replacement decreased from 15% (6/41 to 9% (4/43) (risk ratio 1.22, 95% confidence interval 0.90 to 1.66, p=0.20). Reoperation for bleeding fell from 12% (5/41) to 7% (3/4[3] (risk ratio 0.57, 95% confidence interval 0.15 to 2.24, p=0.42). Neurological deficit increased in frequency from 10% (4/41) to 19% (8/4[3] risk ratio 1.91, 95% confidence interval 0.62 to 5.85, p=0.25).

Conclusions: Within a single surgeon practice over an 18 year period the in-hospital mortality for patients undergoing surgery for type A aortic dissection halved. There was an increase in the rate of aortic valve conservation and a reduction in the rate of bleeding complications. However, despite developments in neuro-protective strategies, the rate of all neurological complications increased.

209 Diagnostic Delays in Type A Aortic Dissection

Authors: UK-TCRC

University of Birmingham, United Kingdom

Objectives: Acute type A aortic dissection (ATAD) is lethal with an estimated mortality rate of 1-2% per hour after symptom onset. Historical data suggest substantial diagnostic and treatment delay (>24h in >50% cases) risking substantial survival attrition. The UK Trainees Cardiothoracic Research Collaborative (UKTCRC) set out to examine contemporary UK practice.

Methods: All UK cardiac surgical centres were invited to participate. Using a standardised questionnaire, retrospective data was collected on presentational symptoms, differential diagnoses, event timings and outcomes for all ATAD admitted between 01/09 and 07/11. Data presented as mean (standard deviation), percentage (%) or median [interquartile range].

Results: Twelve centres submitted data on 220 ATAD patients (age 61.0(13.7)y; 68.5% male). Time to hospital presentation from symptom onset was 2[1.2, 4.9] h.The most common symptom was sudden onset (91.5%) chest±back pain, 9.1% had a painless presentation and 76% presented to non-cardiac surgical centres. A resolved or established neurological deficit was present in 20.3%. Bilateral upper limb blood pressures were recorded in 40.4% and of these 59.3% had a >20mmHg difference in blood pressure. ATAD was recorded in the primary differential diagnosis in 69% but 46% received anti-platelet±anticoagulation therapy. Time from admission to diagnosis was 4.5 [2.3 18.3]h. The distance travelled to surgical centres was 15.3 [3.9, 36.9] miles and 97% underwent operation 14.8 [9.1, 32.8]h from symptom onset. Overall in-hospital mortality was 21.6%.

Conclusions: This audit is restricted to those admitted to surgical centres. In the UK, these patients predominantly present initially to non-cardiac surgical centres. Although patients present quickly, there are delays in diagnosis and treatment which are less than historical reports. Nevertheless, these delays could be improved by Emergency Department education of high risk features and accelerated imaging, transfer and surgery.

210 Finite Element Modelling of Intramural Haematoma in the Thoracic Aorta - Size Does Matter

Authors: Priya Sastry[1] R.A. Zhao[2] M.L. Field[3] D. Richens[4]

1 Papworth Hospital, United Kingdom; 2 AZ Engineering and Science, San Jose, USA; 3 Institute of Cardiovascular Medicine, Thoracic Aortic Aneurysm Service, Liverpool Heart and Chest Ho, United Kingdom; 4 Trent Cardiac Centre, Nottingham University Hospitals NHS Trust, United Kingdom

Objective: Intramural haematoma is an aortic pathology which is currently treated in a similar manner to acute dissection. However, the demonstration that IMH may regress in a significant proportion of patients is important given the risks associated with intervention. This work endeavours to use a biofidelic 'in-silico' model of human aorta to predict the influence of IMH size and shape on the stresses in the aorta, and therefore the risk of dissection or rupture. The long-term goal of the research is to help determine appropriate treatments of IMH according to the anatomy presented.

Methods: We employed finite element methods to build a three layer section of aorta, utilising clinical data to dictate the behaviour of the tissue layers and dynamics of blood flow. We observed the effect on aortic wall stresses with variations of clot size and shape. Numerical methods for considering the interaction between aortic tissue (solid) and blood (fluid) were defined using Arbitrary Lagrangian Eulerian methods.

Results: Our initial simulations confirmed the size and shape of clot affect the magnitude of stresses of aorta (see Table 1). The intima experiences the greatest rise in stress and strain. Our model suggests that when the model 'clot' exceeded 10mm in all dimensions, the stress on the intima reached breaking point, and dissection ensued.

Case	*Clot*	*dimensions*	*(mm)*	*Volume (mm^3)*	*Von Mfises stress (MPa)*	*Principal strain*
	a	b	c			
1	0	0	0	0	0.64	0.26
2	2	5	5	91	0.7	0.28
3	4	5	5	199	0.7	0.285
4	4	8.6	10	645	0.7	0.29
5	8	8	8	1064	0.7	0.29
6	10	8	10	1549	0.8	0.32
7	10	16	20	6637	0.9	0.38

Conclusions: This work confirms the feasibility of using a three layer FE model of the aorta to simulate the evolution of clots. Our data suggests that the size of clots is main factor to the magnitude of stresses of aorta, and corroborates evidence in the literature proposing that IMH diameter greater than 11mm may be predictive of progression.

211 Dilatation of the Remaining Aorta Following Aortic Valve or Root Replacement in Patients with Bicuspid Aortic Valve

Authors: Nada Abdulkareem; S.G. Jones; O. Valencia; A. Alassar; M. Jahangiri

St. George's University of London, United Kingdom

Objectives: The natural history and management of dilatation of the remaining aorta in patients with bicuspid aortic valve (BAV) following aortic valve replacement (AVR) or aortic root replacement (ARR) remains controversial. We aim to identify the dilatation of the remaining aorta post AVR with or without ARR in patients with BAV compared to patients with tricuspid aortic valve (TAV).

Methods: 395 patients who underwent AVR or ARR between 2002 and 2009 were studied. Preoperative echocardiograms were performed on 192 BAV patients; these were compared with 203 TAV patients. Standard aortic measurements were taken. Ascending aorta diameter ≥4.5cm was regarded aneurysmal. Postoperative echocardiograms were compared with subsequent echocardiograms at a median follow-up of 3.8 years (1.2-6.8 years).

Results: Median ages of BAV and TAV patients were 58±14 and 65±16 years respectively. Preoperative diameter of ascending aorta in BAV group with non aneurysmal aorta (n=143) was significantly higher than TAV group with non aneurysmal aorta, (n=129)($p<0.001$). In both BAV and TAV groups with non aneurysmal aorta who underwent AVR, there was no significant increase in diameter of the ascending aorta and arch up to 5 years follow-up. In patients with aneurysmal aorta, BAV (n=49) and TAV (n=74) who underwent ARR, there was also no significant difference in growth of the remaining aorta at 3 and 5 years follow-up.

Conclusions: No significant dilatation of the ascending aorta was observed following AVR with diameter <4.5cm or dilatation of the arch in patients with ascending aorta diameter ≥4.5cm following ARR in patients with BAV compared with TAV at 5 years following surgery. This supports intervention with ascending aorta ≥4.5cm in BAV patients with concomitant valvar disease.

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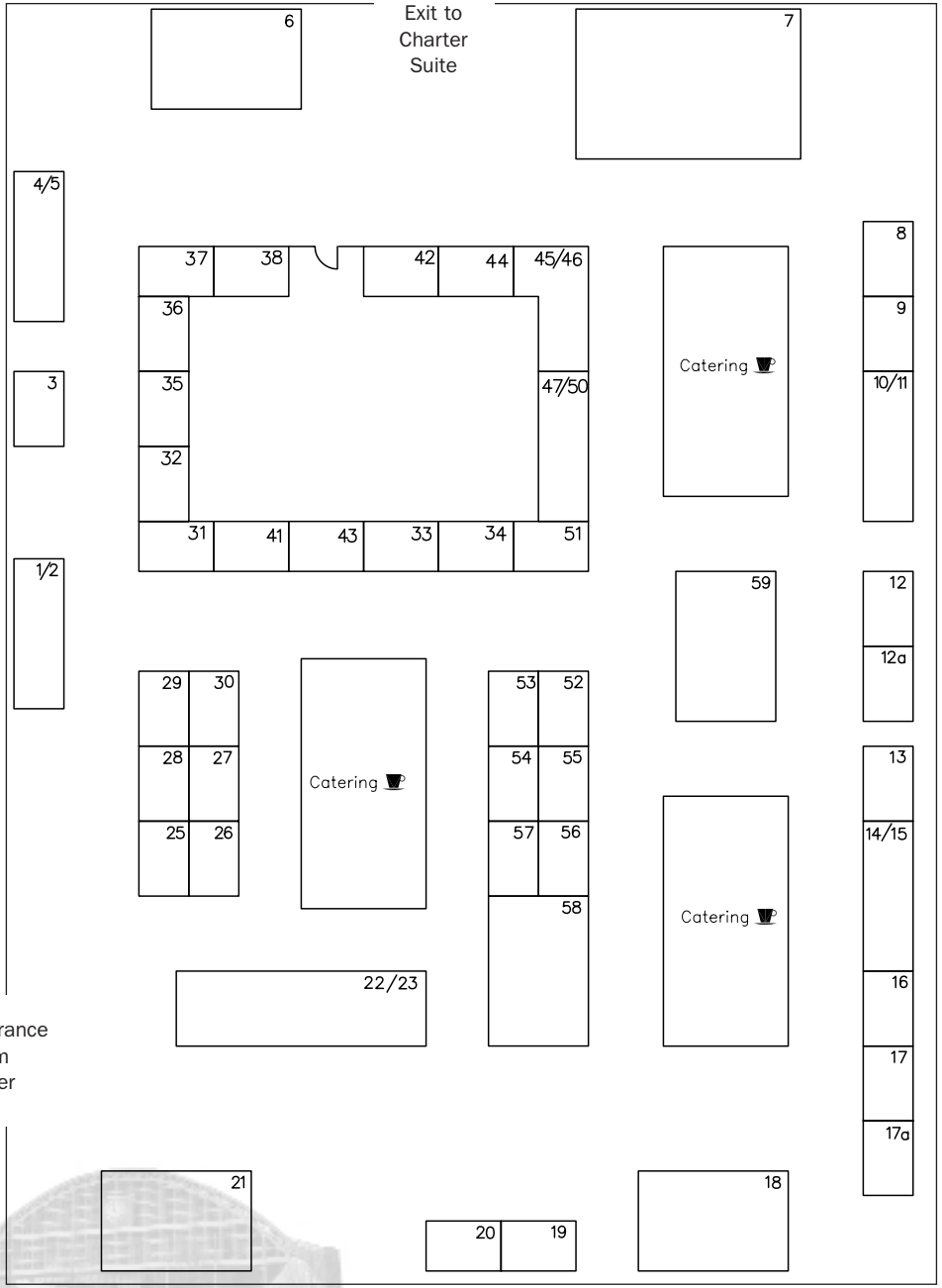

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CALMEDICAL — STANDS 10/11

CalMedical is a distribution company offering new technologies to in the specialities of Cardiac, Thoracic and Anaesthesia. To introduce these techniques and products we are very focused on training and support as well as offering the highest possible quality and flexibility to service evolving surgical practice.

We are based in Lanark in Scotland and are the UK distributors for Estech Inc (Minimal Access Cardiac and Thoracic Surgery, AF Ablation and OBCAB), Cardiamed (Mechanical Valves), Biomet (Sternal Closure), Gunze (Airleak prevention), Sciencity (Aortic and Mitral Valve repair) and Kips Bay Medical (Saphenous Vein Support Mesh). We look forward to seeing you on our stand at the SCTS Meeting.

Contact Details
Phone: 0800 954 9212
Email: info@calmedical.co.uk
Web: www.calmedical.co.uk

CARDIAC SURGERY ADVANCED LIFE SUPPORT COURSE (CALS) — STAND 31

Cardiac Surgery Advanced Life Support (CALS)

The CALS Course is now in its 8th year, and teaches the EACTS and European Resuscitation Council for the management of arrests after cardiac surgery. We have visited over half of units in the UK who now use our protocol and have run 50 events worldwide. We also teach a comprehensive course on perioperative management after cardiac

surgery including hypotension, respiratory and airway emergencies, blood gases, CXRs and ECGs, pacing, IABPs, and internal massage. Our dates this year are 29-30th May St Georges, London, 19-21st July Penrith, 15-17th November Penrith. Check out our website www.csu-als.com. We also provide Manikins for units to practice themselves.

Joel Dunning
www.ctsnet.org/home/joeldunning
www.csu-als.com
Facebook : www.facebook.com/group.php?gid=115765272129&ref=mf

The Old Rectory
Crosby Garrett
Kirkby Stephen
CA17 4PW
Tel : +447801548122

CARDIOLOGIC LTD — STANDS 14/15

Cardiologic Ltd is proud to present the latest products developed by Atricure for Atrial Fibrillation surgery.

The Cosgrove-Gillinov Atriclip, launched in 2010 has been a popular device to close the LAA simply and safely. This year we are launching the third generation Atriclip , specially designed to make it even easier for open chest placement.

The new Ice Box cryoablation system will be on display, which when combined with the Cryo2 probe offers the Cardiac Surgeon the ultimate in user friendliness and clinical efficacy.

The complete range of Osypka temporary pacing wires and pacing boxes will also be on the stand, including the new Triple Chamber pacing box.

Cardiologic Ltd
Hillside House
Cowesby
Thirsk
North Yorkshire YO7 2JL
UK

Tel: +44 (0)1845 537 870
Fax: +44 (0)1845 537 872
Website: www.cardiologic.co.uk
Contact: Andrew Coane, Sales and Marketing Director
Mobile: 07870 255 758
Email: andrewcoane@cardiologic.co.uk

CARDIO SOLUTIONS — STAND 59

Cardio Solutions is a UK based company dedicated to the supply and sales management of cardiothoracic equipment to the UK health market. Established in 2005, Cardio Solutions has continued to build on relationships within the medical industry to ensure the highest quality of service in the delivery of cardiothoracic equipment, education and support to surgeons, NHS Trusts and hospitals.

Our product portfolio encompasses some of the finest innovations in medical technology including; St Jude Heart Valves, Conduits, Mitral Repair Rings and the Epicor High Intensity Focused Ultrasound (HIFU) ablation device; Medical Concepts Temporary Pacing Wires and Disposable Patient Cables; Cormatrix ECM Technology to repair and remodel damaged cardiovascular tissue; A&E Medical Aortic Punches, Sternal Wire including the Double Wire and their Temporary Pacing Wires; FLEXIGRIP- Nitinol Sternal Closure Clips from Praesidia S.r.l; Integuseal from Kimberly Clarke that helps reduce surgical site infection in all disciplines; and one recent additions is the Sternal Retractor from TeDan Surgical Innovations.

For further information please contact Cardio Solutions on:
Tel: +44 (0)800 612 80 20
Fax: +44 (0)800 612 80 30
Email: customer.services@cardiosolutions.co.uk
Web: www.cardiosolutions.co.uk

CAREFUSION — STAND 55

At CareFusion, we understand that infection prevention is the key to reducing healthcare associated infections (HCAIs).

Patient's skin dwelling bacteria are the major source of infections associated with medical and surgical invasive procedures. Normally 'harmless', these bacteria live in the top five cell layers of the skin[3] and can enter the bloodstream whenever the integrity of the skin is breached, - for example in surgery.

ChloraPrep is the only licensed and evidence-based skin preparation system that meets the new Department of Health High Impact Intervention to prevent surgical site infection[1,2].

The 2% Chlorhexidine concentration is now proven in 39 outcome studies and recommended in 12 evidence-based guidelines.

ChloraPrep® is a medicinal product containing a solution of 2% chlorhexidine gluconate (w/v) in 70% isopropyl alcohol (v/v) and is a licensed, single use, sterile, 'non-touch' skin antisepsis system available in both clear and tint in a variety of sized applicators. ChloraPrep is applied with a gentle back and forth motion for 30 seconds then allowed to air dry completely prior to invasive procedures.

CareFusion is committed to providing a safer environment for everyone.

[1] Department of Health(2011) High Impact Intervantion: CareBundle to prevent surgical site infection. Available at http://hcai.dh.gov.uk/files/2011/03/2011-03-14-HII-Prevent-Surgical-Site-Infection-FINAL.pdf. Dateaccessed: 12.04.11

[2] UK PL 31760/0001

[3] Hendley JO, Ashe KM. Antimicrob Agents Chemother 1991; 35:627-31.

CARINOPHARM — TABLE STAND

Carinopharm is a German based pharmaceutical company which specialises in Cardiology and Intensive Care medicine. Based in Elze (close to Hanover).

Northern Germany, Carinopharm was established in 2000. Currently Carinopharm market and distribute enoximone (Perfan) in the UK but are actively developing new products for the UK marketplace.

www.carinopharm.co.uk

CASMED — STAND 36

CASMED, a leader in vital signs monitoring systems, presents the innovative **FORE-SIGHT® Absolute Tissue Oximeter**. This non-invasive device provides immediate, reliable data for assessing a patient's tissue oxygenation status, allowing clinicians to quickly react to reverse potentially harmful events before they become critical. FORE-SIGHT is the first and only device in its class that provides a non-trend, absolute measure of tissue oxygen saturation for all patients, regardless of age or weight.

- **Intelligent StO_2 monitoring system** features patient-based algorithms
- **Proven precision from LASER-SIGHT® technology** - no baseline is needed
- **Full line of optimized sensors** including Small Non-Adhesive (for fragile skin), Small, Medium, and Large Sensors

CHALICE MEDICAL LTD — STAND 28

Chalice Medical Ltd was established in 1998 to import high quality medical products from suppliers in Europe and the U.S.A specifically for the Cardiac Surgery and Perfusion market within the U.K & Ireland. Since then it has installed a manufacturing facility to support its growing business. From the head office in Nottinghamshire, Chalice manufacture customised extracorporeal tubing packs, cannula & oxygenators within it's state of the art cleanrooms. The sales & marketing suites, climate conditioned warehouse and distribution centre are also located here.

Our products range includes:

VAD / ECMO Hardware & Disposables:

- CentriMag® & PediVAS™ ECMO and short term VAD,

Tissue Oxygen Saturation Monitors:

- Fore-Sight "Absolute" Cerebral Oximeter

ECLS Patient Transport Systems:

- Fully Customised Patient Transport Trolleys

Customised and Coated Extra-Corporeal Tubing Sets:

- Miniature Bypass and conventional systems
- Complete and pre-connected ECMO systems

Oxygenators:

- The only manufacturer of oxygenators in the UK
- Adult, Paediatric and Neonatal Models - available in standard or long-term models,

Cannulae:

- Full range of cannulae from leading companies around the globe

CHALICE MEDICAL LTD — STAND 28

Woodland Court
Coach Crescent
Worksop
Tel: +44 (0)1909 470777
Fax: +44 (0)1909 470888
Nottinghamshire, S81 8AD
Email: enquiries@chalicemedical.com
Web: www.paragonoxygenator.co.uk
Web: www.chalicemedical.com

COVIDIEN — STAND 57

Covidien is proud to sponsor the Society of Cardiothoracic Surgery in Great Britain and Ireland meeting 2012.

Covidien recognises the challenges faced in modern day surgery and we continue to develop innovative products and solutions in response to feedback from our customers. We constantly strive to improve our products to enable consistent patient outcomes of surgery in Cardiac and Thoracic procedures.

We are honoured to partner with the Cardiothoracic surgical community in the development and promotion of best practices, and are proud to develop resources and education programmes to support this.

Please visit Covidien and be introduced to our extended surgical solutions of Tri-Staple™ Technology, V-Loc™ Wound Closure Device, LigaSure™ Vessel Sealing devices and ForceTriad™ Energy platform portfolio.

Covidien (UK) Commerical Ltd
154 Fareham Road
Gosport
Hampshire PO13 0AS
Tel: +44 (0)1329 224 330
Fax: +44 (0)1329 224 400

CRYOLIFE EUROPA LTD — STAND 35

CryoLife Europa Ltd. is a wholly owned subsidiary of CryoLife, Inc., the leader in the processing and distribution of implantable living human tissues for use in cardiovascular, and vascular surgeries.

CryoLife deliver glues, sealants and haemostats, with advanced technologies for bleeding applications.

BioGlue® Surgical Adhesive which is used as sealant, adhesive and for tissue reinforcement is clinically proven in over 675,000 procedures and 300 studies. BioGlue is available in 2ml, 5ml and 10ml sizes and a variety of tips so it can be applied in thin films and laparoscopically.

PerClot® , the next generation haemostat, is an adjunctive haemostat for the control of surgical bleeding. PerClot is a natural plant based haemostat that is simple to use and effective. PerClot is available in 1g, 3g, and 5g sizes and with tip lengths for open, laparoscopic or robotic procedures.

BioFoam(r) is a unique mixed cell adhesive foam developed to enhance haemostasis, delivered as a liquid it rapidly expands to form a haemostatic foam that seals tissue and promotes cellular aggregation. BioFoam is available in 2ml, 5ml and 10ml sizes.

CryoLife Europa
Bramley House
The Guildway
Old Portsmouth Road
Guildford
GU3 1LR
UK

Tel: +44 (0)1483 441030
Fax: +44 (0)1483 452860
Email: Europa@cryolife.com

DENDRITE CLINICAL SYSTEMS LTD STAND 30

Dendrite Clinical Systems is a specialist supplier of clinical databases, with >250 hospital installations and >90 national & international databases across 40 countries.

The company has developed a sophisticated clinical outcomes database management system that creates an environment in which the analysis and reporting of data becomes easy and clinically meaningful. The software allows clinical users with the ability to track time related clinical data for analysis of any medical or surgical procedure, all within a single software environment.

In conjunction with the SCTS, Dendrite recently published the 'National Thoracic Surgery Activity & Outcomes Report 2011', which includes more than 400,000 operations from 1980 to 2010, as well as hospital-specific data for the past three years.

To review the 2011 Thoracic Report or have a software demonstration, please visit STAND 30.

The Hub
Henley-on-Thames
Oxfordshire RG9 1AY
Tel: 01491 411 288
Fax: 01491 411 377
Email: info@e-dendrite.com
Website: www.e-dendrite.com
Head Office Contact: Dr Peter K H Walton, Managing Director

EDWARDS LIFESCIENCES UK & IRELAND STAND 7

Since the first successful heart valve replacement with the Starr-Edwards Silastic Ball Valve more than 50 years ago, Edwards Lifesciences has been dedicated to providing innovative solutions for people fighting advanced cardiovascular disease, the world's leading cause of death and disability.

Edwards is the global leader in the science of heart valves and hemodynamic monitoring. Driven by a passion to help patients, the company and its 7000 employees partner with clinicians to develop innovative technologies in the areas of structural heart disease and critical care monitoring that enable them to save and enhance lives.

Please visit our website at www.edwards.com

ELITECH UK — STAND 33

With the backing of a 100 million euro organisation, with facilities throughout the world, ELITech UK LTD is able to supply a range of quality niche products to clinical markets throughout the UK.

Since 2003 ELITech UK LTD has been International Technidyne Corporation's Hemochron distributor for the United Kingdom, and Northern Ireland. The Hemochron Signature range of Whole Blood Microcoagulation systems are widely considered to be the "Gold Standard" for monitoring Activated Clotting Time (ACT), together with other coagulation parameters such as APTT and PT, at the Point of Care.

In 2009 ELITech UK LTD was awarded the distribution contract for the Accumetrics VerifyNow System for Measuring Response to Antiplatelet Therapy. Simply. Quickly.

Visit ELITech at stand 33 to discuss how Platelet Function Testing can benefit you, your patients and your hospital budgets.

ETHICON LIMITED — STAND 6

ETHICON Products, part of the JOHNSON & JOHNSON Family of Companies is the worldwide leader in suture products and suture technology. ETHICON has a long history of innovation in providing products-including sutures, topical adhesives and wound drains, that enhance patient care

Since its founding over 120 years ago, the Company has worked in partnership with clinicians, aligning our technological innovation to support the ever-evolving standards of surgery. We consider it our mission to be a valuable partner at every step of every CV surgical procedure.

Our tradition of innovation has resulted in introductions that include PROLENE*

Polypropylene Sutures, BV-175 Series Needles, ETHIBOND* Excel Polyester Sutures and our new Plus Sutures that provide antibacterial protection to prevent bacterial colonisation on the suture. We also offer DERMABOND* ADVANCED Topical Skin Adhesive, providing comfortable, secure wound closure with a microbial barrier and excellent cosmetic results.

In 2012 ETHICON will launch EVERPOINT™ Cardiovascular Needles which are designed to deal which provide advanced penetration performance.

ETHICON Biosurgery has the most comprehensive range of Haemostasis Solutions and has continued to bring to market innovative technologies including EVICEL® fibrin sealant (Human), SURGIFLO® with Thrombin, SURGICEL® NU-KNIT® and SURGICEL® FIBRILLAR™ to the Topical Absorbable Haemostat sector.

With this broad range of products, ETHICON is present at every step of coronary artery bypass graft, valve, and closure procedures, from pericardial retraction to chest closure.

Ethicon Products
P.O. Box 1988
Simpson Parkway
Kirkton Campus
Livingston EH54 0AB
Tel: +44 (0)1306 594500

EUSA PHARMA STAND 53

EUSA Pharma is a rapidly growing transatlantic specialty pharmaceutical company focused on oncology, pain control and critical care. The company has three products which it currently markets in the UK:

- Collatamp® EG: an antibiotic surgical implant for the treatment and prevention of post-surgical infection. Prevent and treat surgical site infections with Collatamp. In the LOGIP trial, the risk of sternal wound infection is halved with Collatamp1.
- Erwinase® : in combination with other anti-neoplastic agents for the treatment of acute lymphoblastic leukaemia.
- Caphosol® : as an adjunct to standard oral care for the prevention and treatment of oral mucositis caused by radiation and high dose cancer therapy

Contact Details:
EUSA Pharma
Building 3, Arlington Business Park
Whittle Way, Stevenage
Hertfordshire. SG1 2FP.
Tel: 01438 740720
Fax: 01438 735740
www.eusapharma.com

1. Friberg Ö et al. Soc Thoracic Surg 2005;79:153-162.

FISHER & PAYKEL HEALTHCARE LTD STAND 8

Fisher and Paykel Healthcare is a leading designer and manufacturer of innovative healthcare devices which incorporate unique features to improve patient care.

We have 40 years experience in the respiratory care market and now offer a broad range of products for use in respiratory and acute care.

Our latest contribution to real innovation is the introduction of Optiflow™ Nasal High Flow™, the most significant advance in respiratory medicine in recent years. The F&P Optiflow system is unmatched in terms of humidity performance and patient tolerance to oxygen therapy. World-leading respiratory technology ensures up to 100% oxygen is delivered at a consistent temperature and humidity level, making it the ideal solution for hypoxemic patients in mild to moderate respiratory distress.

Our headquarters and research facilities are based in New Zealand, with manufacturing facilities located there and in Mexico, and sales and marketing operations in 30 countries. In total, our products are sold in more than 120 countries either directly or through distributors or OEMs.

We believe that product development and clinical research are critical to success. A significant proportion of our workforce is engaged in clinical research and product development.

Fisher & Paykel Healthcare Ltd
16 Cordwallis Park
Clivemont Road
Maidenhead
Berkshire SL6 7BU
T: +44 (0)1628 828136
F: +44 (0)1628 626146
E: customerservice@fphcare.co.uk
www.fphcare.co.uk

G+N MEDICAL — STAND 9

G & N Medical, established in 1974, is a supplier of medical equipment and consumables to NHS hospital trusts and healthcare institutions in the UK and globally. We specialise in products which allow costs to be controlled, while improving patient care. ThorAcc is an innovative, non-invasive device which assists in the closing of the thoracic cavity during open sternotomy procedures. A clinical audit of its use at King's College Hospital, London shows it to be effective.

HAEMONETICS — STAND 32

Haemonetics (NYSE: HAE) is a global healthcare company dedicated to providing innovative blood management solutions for our customers. Together, our devices and consumables, IT products, and consulting services deliver a suite of business solutions to help our customers improve clinical outcomes and reduce the cost of healthcare for blood collectors, hospitals, and patients around the world. Our technologies address important medical markets: blood and plasma component collection, the surgical suite, and hospital transfusion services. To learn more about Haemonetics visit our web site at www.haemonetics.com.

Haemonetics Ltd
Suite 1 Building 5
5 Hercules Way
Leavesden Park
Watford, WD25 7GS
United Kingdom
Tel: 01923 279 600
Fax: 01923 279 630

www.haemonetics.com
Customer support:
Tel: 0808 234 4817
Fax: 0808 2344845
Email: info.uk@haemonetics.com

HEARTWARE INC — STAND 20

HeartWare, Inc. is developing a family of implantable mechanical circulatory support systems for the treatment of advanced heart failure. Through a cadence of progressively smaller devices implanted using less invasive techniques, HeartWare expects to treat an increasing proportion of heart failure patients and to access them at an earlier stage of their disease progression. HeartWare's lead device, the HeartWare(r) Ventricular Assist System, incorporates state-of-the-art peripherals and features the only full-output pump designed to be implanted less invasively in the pericardial space. The HeartWare(r) System has CE-Mark approval and is currently the subject of a 150-patient US IDE clinical trial.

www.Heatware.com

HILL-ROM — STAND 43

Following cardiac or thoracic surgery, retained airway secretions in high risk individuals can lead to the development of pulmonary complications that may delay their recovery. This group of patients has been shown to benefit from the use of The Vest® Airway Clearance System.

The Vest® System uses a technology called High Frequency Chest Wall Oscillation (HFCWO). The Vest® System has an inflatable vest connected by Air Hoses to an Air Pulse Generator. During therapy, the inflatable vest inflates and deflates rapidly, applying gentle pressure across the chest wall. This works to loosen and thin mucus and to move it toward the larger airways, where it can be cleared by coughing or suctioning. Safety studies have shown The Vest® to be safe to use with post cardiac and thoracic surgery patients and it is frequently used within 24 hours of surgery. The Vest® can be used in both the Intensive Care Unit and also on the wards where patients can initiate their own therapy under the guidance of the respiratory physiotherapist.

For further information or a demonstration of the system please visit the Hill-Rom stand or contact us via www.hill-rom.co.uk

INTAVENT DIRECT LTD — STAND 16

Intavent Direct Ltd has been in the airway device business for over 20 years and was responsible for bringing to market the original LMA® Laryngeal Mask Airway as designed by Dr Archie Brain.

Now with over two decades of customer focussed support, education and continuing product innovation, Intavent Direct Ltd remains the market leading provider of clinically effective airway management devices.

Intavent Direct Ltd's product portfolio continues to grow and includes the Ultimate T-Bag® for Oxygen Enrichment, the Venner™ A.P. Advance™ Video Laryngoscope and the MAD® needle free drug delivery system.

The aim of Intavent Direct Ltd is to maintain an innovative approach to airway management and continue to introduce new devices.

For 2012 Intavent Direct Ltd is delighted to introduce the Nonin Equanox(tm) Regional Oximetry System. An intuitive system which uses the powerful, simple design of Nonin Equanox technology that generates stable, responsive processing to inspire confidence that rSO_ values reflect true patient physiology.

Intavent Direct Ltd
14 Cordwallis Park
Clivemont Road
Maidenhead
Berkshire, SL6 7BU
Tel: 01628 560020
Web: www.intaventdirect.co.uk
Email: enquiries@intaventdirect.co.uk

JOTEC — STAND 12A

JOTEC provides Vascular and Cardiac Surgeons, Radiologists and Cardiologists with SOLUTIONS FOR VASCULAR DISEASE. According to the highest standards of innovation and quality, JOTEC develops, manufactures and markets medical devices for peripheral and aortic vascular disease. The product portfolio comprises surgical grafts as well as endovascular implants and accessories. Continuous product improvements and new developments aim to offer best possible solutions for both - patient and physician.

For further information please visit: www.jotec.com

Contact details:
JOTEC UK c/o NUROS Ltd
6 Abbey Lane Court
Evesham, Worcs
WR11 4BY
Tel 01386 429421
Mobile 07712 614120
JOTEC GmbH
Lotzenäcker 23
D-72379 Hechingen
T +49 (0) 7471 / 922 0
F +49 (0) 7471 / 922 100
www.JOTEC.com

KARL STORZ STAND 37

Karl Storz GmbH & Co. is the world's premier surgical endoscopy company with an established and acknowledged reputation for producing the finest quality surgical endoscopes and accessories. We shall be displaying a wide range of cardio-thoracic instruments for endoscopic procedures. These include the following in the cardio-thoracic product range:-

Multifunctional retractor for Thoracic and Heart Surgery

Endoscopic Saphenous Vein Harvesting system

Video-Mediastinoscope

If you are considering purchasing HDTV equipment and wish to ensure a state-of-the-art, future-proof HDTV solution, we shall be displaying the Karl Storz HD IMAGE1 Camera System with True 1080p HDTV incorporating 1080p resolution, 16:9 widescreen display and 16:9 acquisition ratio. So please visit the Karl Storz stand no.37, and we shall be pleased to discuss all your endoscopic requirements.

Company: Karl Storz Endoscopy (UK) Ltd
Contact Name: Steve Anderson
Address: 392, Edinburgh Avenue, Slough, Berkshire SL1 4UF
Telephone: 01753 503 500
Fax: 01753 578 124
Email: customerserivce@karlstorz.com

KLS MARTIN GROUP - SURGICAL INNOVATION IS OUR PASSION STAND 54

KLS Martin is a medium-sized group of companies with a readiness to innovate and invest, based on a clear growth strategy. We offer more than marketable products. We develop comprehensive medical-technical problem solutions with a high practical relevance because they have been implemented in close collaboration with the users. The result are products and systems that impress with a high innovation level and differentiate themselves from the competition by significant USPs (unique selling propositions). They benefit the surgeon, the medical staff and the patients alike because they serve health and its restoration.

With its comprehensive, user-oriented product portfolio, KLS Martin sees itself as partner of all the people working in the operating room and the central sterile supply department. Our product range comprises more than 13,000 instruments and units, plus surgical and comprehensive services. The name of KLS Martin stands for top-quality and innovative medical technology. Many of our innovative developments give us a leading position in a number of market segments. The secret behind this success are top achievements at any level, from our own research and development (R&D) through production based on highly advanced manufacturing techniques, thus guaranteeing maximum quality and functionality, to the internationally operating sales organization. Above all, however, the success of our products is due to the fact that they are "made in Germany".

LEMONCHASE — STAND 13

Lemonchase are the exclusive UK distributors of Designs for Vision loupes. Designs for Vision are the number one choice for surgeons worldwide (indeed, they are the choice of over 95% of surgeons in the US and UK).

Whether you are contemplating first pair or would like advice on any changes to your current pair, Nick Lemon & Mark Chase would be delighted to see you at their stand where they are also demonstrating Designs for Vision's outstanding range of Lithium Ion, Battery powered lights, for up to 12 hours of continual use.

Please contact 01892 752305 or info@lemonchase.com/www.lemonchase.com

MAQUET — STAND 21

MAQUET will be showcasing a number of exciting products on our stand this year. CARDIOHELP, Maquet's latest technology in ECLS is a versatile and compact solution for the most critically ill patients. With the ability to perform both VV and VA ECMO, low flow CO2 removal and VAD, CARDIOHELP represents the future in ECLS, to add to this it is the only system approved for transportation for Adult and Paediatric patients.

From our Cardiac Surgery division we have HEMOPRO 2, our latest version of the much trusted EVH system. With more safety features and greater ease of use you can be sure of conduit quality with MAQUET. Our Cardiac Assist division unveils the new CARDIOSAVE Intra-aortic balloon pump. It's more than a pump, it's a revolution.

We welcome the Critical Care division to the stand this year who are proud to launch their new Anaesthesia Machine, FLOW-i. The modular FLOW-i is a flexible, adaptable and upgradeable system that represents the next step in OR ventilation with the most powerful ventilator on the market. It includes new technology in the form of the "volume reflector" which eliminates the need for bellows and the fear of leakage. Add injection vaporizers and a fully software driven flexible platform coupled with Maquet's renowned build quality and it is clearly a very special machine.

For further information and demonstrations please visit our stand.

Maquet Ltd
14-15 Burford Way
Boldon Business Park
Sunderland
Tyne and Wear
NE35 9PZ

Tel:	+44 (0)191 519 6200
Fax:	+44 (0)191 519 6201
Email:	info@maquet.co.uk
Website:	www.maquet.co.uk

MEDELA STAND 27

Medela Healthcare has been making Vacuum Technology for Healthcare professionals for over 50 years.

Our digital chest drain, Thopaz sets new standards in thoracic drainage therapy: The compact system provides regulated negative pressure close to the patient's chest, based on the patient's air leak.

Set-up and handling of Thopaz is very easy with well-designed accessories adding even more comfort to the lightweight system.

Thopaz offers a progressive, innovative therapy that allows physicians and nursing staff to monitor air leaks objectively, aiding them to make timely, objective decisions in chest tube management.

Medela Healthcare offers a range of innovative and unique design medical vacuum pumps and consumables for various application areas.

www.medela.co.uk
Customer Service Team Tel No. 0161 7760400

MEDTRONIC LTD STAND 58

Find Opportunity in Change and consider Medtronic's intuitive solutions in Structural Heart and Aortic Diseases including: tissue, mechanical and transcatheter valves; irrigated RF and cryo surgical ablation devices; aortic stent graft systems and OPCAB, MICS CABG, cannulae and perfusion products.

Please visit our stand where the team will be happy to discuss our comprehensive product range.

Medtronic Limited
Cardiac Surgery Division
Building 9
Croxley Green Business Park
Hatters Lane
Watford
WD18 8WW
Tel +44 (0) 1923 212213
Fax +44 (0) 1923 241004
www.medtronic.co.uk
www.innovatingforshd.com

MULTIPLATE IL UK LTD/VERUM DIAGNOSTICA GMBH — STAND 52

We are pleased to announce an exciting new development in individualised platelet function testing. Standardised, specific, rapid AND cost effective:

The MULTIPLATE, available in the UK from IL UK Ltd.

Sensitive to Aspirin, Clopidogrel (Plavix), Prasugrel and Ticagrelor, Plus ReoPro, Aggrastat and other GpIIbIIIa antagonists.

Intervention algorithms are available to ensure tailored and specific use of targeted blood products only when specifically required.

Comprehensive follow up studies confirm Multiplate as a simple, sensitive and effective way to identify at risk patients so that you can target treatment accordingly.

Come and see us in the exhibition hall for a full demonstration, and information about how MULTIPLATE can make a real difference at your hospital.

Contact: Suzanne Kelly
Email: s.kelly@multiplate.net
www.multiplate.net

NEWGATE TECHNOLOGY — STAND 3

Nexus EPR & SAFERsleep

Nexus EPR (Electronic Patient Record) consists of a set of Clinical Information Systems managing the progress of a patient from referral, through initial consultation, pre-assessment and theatre episode to discharge. Information from each system is stored as an electronic patient record centrally and can be accessed from any hospital on an area, region or country-wide basis. In fact, Nexus EPR, along with Nexus Theatre, our touch screen based theatre management system, was chosen in 2006 for the national solution for Northern Ireland.

Nexus EPR - core patient administration and EPRNexus Theatre - touch screen based theatre management system linked to SAFERsleep

Nexus Endoscopy - enables clinicians to quickly and efficiently record the details of every endoscopy procedure.

Nexus Sterile Services - work flow management and tracking

Nexus Journal - tracking and costing facilities at point-of-care

Nexus Bed Manager - real-time control linked dynamically to patient scheduling

Nexus Ward - incorporating Nexus Discharge Control, Infection Control, Loan Equipment and Nurse Handover.

Nexus Stock - GS1 based, provides data and costs to all Nexus systems.

SAFERsleep - provides drug safety cross checks and produces a comprehensive, time-related, anaesthetic patient record which is then incorporated into Nexus EPR.

NHS HEART PROGRAMME STAND 42

NHS Improvement's strength and expertise lies in practical service improvement. It has over a decade of experience in clinical patient pathway redesign in cancer, diagnostics, heart, lung and stroke and demonstrates some of the most leading edge improvement work in England which supports improved patient experience and outcomes.

Working closely with the Department of Health, trusts, clinical networks, other health sector partners, professional bodies and charities, over the past year it has tested, implemented, sustained and spread quantifiable improvements with over 250 sites across the country as well as providing an improvement tool to over 1,000 GP practices

NHS Improvement
St Johns House 3rd Floor
East Street
Leicester, LE1 6NB
Tel: 0116 2225184
Email: info@improvement.nhs.uk
Web: www.improvement.nhs.uk

OMEGA CRITICAL CARE LIMITED STAND 19

Omega Critical Care Limited, manufactures and markets truCCOMS® , true Continuous Cardiac Output Monitoring System, a breakthrough in real-time heart monitoring. truCCOMS® is the first and only beat-by-beat cardiac output monitoring system giving clinicians cardiac measurements directly from the heart in critical care patient management.

truCCOMS® makes use of truCATH a bespoke pulmonary artery catheter (PAC). Many Cardiac Surgeons and Anaesthetists believe that there is still no alternative for reliable cardiac output determination other than the PAC.

Key Characteristics:

* Real-time beat by beat continuous data: allows clinicians to take decisions based on actual information not averages.
* Fast response: changes detected in seconds which allows rapid response for critically ill or unstable patients.
* Accurate: Cardiac Output measurement is not affected by patient body temperature fluctuations.
* Effective in use with tricuspid incompetent patients

truCCOMS® uses an innovative application of heat transfer principles and is capable of detecting rapid changes in cardiac output. It outperforms existing continuous and intermittent methods available on the market relying on thermodilution principles. truCCOMS® offers significant clinical advantages over current technologies.

Omega Critical Care Limited
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East Kilbride
Glasgow
G74 4NB
Tel: 01355 265733
www.omegacirticalcare.com

PIERSON SURGICAL LIMITED — STAND 12

Pierson Surgical Ltd is a specialist surgical products distributor , our current product range for Cardiac Surgery includes:

* **BioIntegral Surgical Heart Valves** - we are the UK Agent for the BioIntegral range of all-biological cardiac devices. BioIntegral Surgical manufactures devices using the No-React® treatment. No-React® is a proprietary detoxification of glutaraldehyde-treated tissue. 13 years of clinical experience with No-React® devices shows reduced toxicity, enhanced biocompatibility, lower rates of infection, adhesion, calcification, and the promotion of endothelial lining.

* **HaemoCer™ Powder Haemostat** - a highly effective, safe , advanced polysaccharide powder that rapidly accelerates natural clotting and forms a thick gel matrix over the site of the bleeding. 100% plant based, it is completely reabsorbed by the body within 48 hours. Ideal for all Cardiothoracic surgery including sternal haemostasis.

* **LeGoo Vessel Occlusion Gel** - a unique product which enables atraumatic, clampless surgery. LeGoo™ is a water-soluble, low-viscosity gel which forms a gel plug at body temperature and is dissolved by applying ice directly to the vessel. Allows the creation of a superior bloodfree field without the use of any clamps for coronary bypass grafts, via Off-Pump (Beating Heart) or On-Pump CABG.

* **Delacroix-Chevalier Surgical Instruments** - made to the highest standards of design and craftsmanship to provide the very best instruments available. As well as precision Micro instruments , we offer Minimally Invasive instruments for Cardiac Valve Surgery and a new range for Video Assisted and Thoracoscopic major pulmonary procedures.

* **Péters Surgical Sutures** - a specialist range of sutures for Cardiac surgery, including Cardionyl® for Mitral Valve Repair and Corolene® which has very low memory, ideal for Coronary grafts.

Tel: 01225 766632
Fax: 07092 315510
Email: sales@piersonsurgical.com
Web: www.piersonsurgical.com

PULMONX — STAND 17

Pulmonx is focused on developing and marketing minimally-invasive medical devices and technologies for the diagnosis and treatment of pulmonary disorders. The Chartis System and Zephyr EBV is the first effective diagnostic and therapeutic solution to the problem of emphysema-induced hyperinflation.

Globally over 30 million patients have been diagnosed with emphysema. COPD is a major cause of disability and a major public health problem. This is the fourth leading cause of death today according to the WHO. Most patients suffering from emphysema currently have few options for treatment.

Emphysema patients suffer from hyperinflation - an increase in volume of the diseased portions of their lungs, which then compresses the healthier areas. Zephyr valves can reduce volume in the diseased portion of the lungs, allowing the more healthy areas to expand and improving breathing mechanics and gas exchanges. The Pulmonx Chartis system provides new information about specific areas of the patient's lung, enabling more informed treatment planning.

The Pulmonx Zephyr EBV is the subject of numerous peer-reviewed studies, and has already been used to treat thousands of patients worldwide. The Chartis System and Zephyr valves have been available as a system in Europe and other countries since late 2009.

www.pulmonx.com

PULSE SURGICAL LTD — STANDS 45 & 46

Pulse continues to be one of the most focused cardiothoracic companies in the UK. As independent distributors, we can offer a unique mix of complimentary products. In particular we will be displaying the Medistim VeriQ system for graft patency verification and the MedXpert Pectus Excavatum correction set. We will also show the Medxpert Stratos system for complex Pectus, flail chest/trauma and rib resection stabilisation. Many unique niche products to assist you in surgery also feature in our range of complimentary products.

42 Kingfisher Court
Hambridge Lane
Newbury Berks
RG14 5SJ
Tel: 01635 555234
Fax: 01635 550050
Email: office@pulsesurgical.co.uk
Website: www.pulsesurgical.com
Contact: Mr. Andrew Dobson

PULSION — STAND 44

Pulsion Medical UK Ltd is a subsidiary of Pulsion Medical Systems, which has become one of the worldwide leading specialists in critical care monitoring and diagnosis systems, dedicated to reducing hospital stay, reducing patient mortality and reducing associated costs. Pulsion Medical Systems focuses on the management of the cardiovascular and organ functions such as the liver, heart and lungs, of the critically ill both in the critical care environment, high dependency, outreach and the high risk surgical patients.

The PiCCO technology was the first minimally invasive monitor able to measure pulmonary oedema at the bedside and with its unique volume parameters has shown a reduction in ventilation time and ICU stay is achievable with this technology.

The LiMON monitor again another unique product in the market place and the only monitor able to provide a measurement of liver function non-invasively at the bedside.

Additionally the Pharma business unit focus's at the diagnosis and therapy management of organ and tissue perfusion in ophthalmology, surgery and hepatology.

Pulsion Medical Systems products are marketed worldwide and Pulsion Medical Systems continue to develop innovative product lines in the medtech field.

Unit C4
Heathrow Corporate Park
Green Lane
Hounslow
Middlesex TW4 6JG
Tel: +44 (0) 845 481 1647
Fax: +44 (0) 845 481 1657
Website: www.pulsion.com

R&D SURGICAL LTD — STAND 38

R&D Surgical offers a range of surgical devices and accessories.

Our offering of a modern headlight that offers freedom and convenience with minimal weight has been well received by the speciality. Alongside the light we can also offer state of the art Loupes.

The Cosgrove and Cleveland Clinic range of retractors are also supplied by us. For the thoracic surgeons we offer dedicated thoracic trocars that are designed with safety in mind.

Additionally, we have a range of consumables that can offer cost savings.

We have a combined experience that is not equalled in the industry and remain committed to supporting the speciality on into the future. Please spare some time to visit our stand at Stand 38.

We look forward to a mutually successful congress.
Email: sales@randdsurgical.com
Tel: +44 (0)7975 696541
www.randdsurgical.com

SAFERSLEEP — STAND 3

Safer Sleep - Record Keeping and Improved Patient Safety

Safer Sleep Limited has developed clinical software solutions for more than ten years and recorded over a million anaesthetic records. The values that are incorporated in the systems are based on sound clinical practice, patient safety, clear presentation of results, efficiencies of recording, improved patient experience, online accessibility to patient forms, quality clinical and management reporting and reduced expenditures for hospitals.

SAFERsleep PORTAL

A collection of web applications for preoperative assessment. The application suite includes customisable preoperative assessment forms and report generator. The system can be accessed from anywhere within an institution or external specialist clinics in other locations. Seamless integration with the SAFERsleep OR anaesthetic record.

SAFERsleep OR

An intra-operative automated anaesthetic record system that combines barcode technology, software and workspace organisation tools to reduce the likelihood of drug errors in operating theatres. It is based on sound safety principles with well documented peer review papers supporting it. The built in system events provides an excellent time management tool when looking at theatre utilisation and cost implications. SAFERsleep OR can be directly linked with Nexus EPR and Nexus Theatre system.

SIGMACON — TABLE STAND

Sigmacon UK are the exclusive distributors for Luxtec Integra Leaders in Surgical Headlights and Headlight Video Cameras. Our products include the MLX Light Source and the UltraLite Pro Headlight. The recently released portable Surgical LED Headlight and the teaching aid of the DLX Headlight Video Camera. For more information visit www.sigmacon.co.uk or email info@sigmacon.co.uk

SORIN GROUP UK — STAND 18

Sorin Group is a global medical device company and a leader in the treatment of cardiovascular diseases. The Company focuses on three therapeutic areas that include: cardiopulmonary bypass (extracorporeal circulation and autotransfusion systems) cardiac rhythm disorders, (heart failure, tachyarrhythmia and bradyarrhythmia systems) heart valve repair and replacement. More than 40 years of expertise, and the broadest range of

tissue and mechanical heart valves and annuloplastic rings, make Sorin Group a reliable partner for Cardiac Surgeons worldwide.

Sorin Group UK Ltd
1370 Montpellier court
Gloucester Business Park
Gloucester
GL3 4AH
Tel: +44 (0)1452 638 500
Fax: +44 (0)1452 638 530

ST JUDE MEDICAL — STAND 59

At St Jude Medical our line of Cardiac Surgery products brings together over 30 years of innovation and experience to offer cardiac surgeons more choice through a comprehensive line of innovative solutions. This product line includes mechanical heart valves, tissue heart rings, and valve repair rings that continues to demonstrate St Jude's commitment to cardiac surgery.

St Jude Medical recently celebrated the 30th anniversary of their first mechanical heart valve implant, which occurred at the university of Minnesota in 1977. Since then St Jude Medical has continued to innovate in its valve development with our Regent™ and Epic™ families of mechanical and porcine valves as well as Trifecta™, the next-generation in pericardial tissue heart valves.

St. Jude Medical
Capulet House, Stratford Business & Technology Park
Banbury Road
Stratford Upon Avon CV37 7GX
Tel +44 (0) 1789 207624
Fax +44 (0) 1789 296822
Mobile +44 (0) 7841 784549
www.sjm.com

SYNTHES — STANDS 47 & 50

Synthes is a leading global medical device company with a fifty year history of working closely with orthopaedic surgeons to develop the best possible solutions for patient care.

Synthes develop, produce and market instruments, implants and biomaterials for surgical fixation, correction and regeneration of the human skeleton and its soft tissues.

Synthes Solutions for Chest Wall Repair & Reconstruction

Synthes now have several solutions for sternal closure after midline sternotomy, sternal reconstruction, multiple rib fractures, flail chest and thoracotomies which include:

Sternal ZipFix system containing PEEK implants, similar to cable ties, with an application instrument to support rapid primary closure with consistent force application.

Titanium Sternal Fixation System for secondary reconstruction following sternotomy or fracture using a locking plate concept with both straight and manubrium plates to stabilise the sternum and promote fusion.

MatrixRIB indicated for the fixation and stabilisation of rib fractures and osteotomies of normal and osteoporotic bone by using precontoured locking plates or intramedullary splints.

XCM Biological Mesh used in general surgical procedures for reinforcement and repair of soft tissue including hernia repair, muscle flap reinforcement and defects of the thoracic wall.

SYNTHES
20 Tewin Road
Welwyn Garden City
Hertfordshire
AL7 1LG
01707 332212
info.gb@synthes.com
www.synthes.com

TELEFLEX — STANDS 4 & 5

Teleflex is a global provider of medical devices used in critical care and surgery. We serve healthcare providers in more than 130 countries with specialty devices for vascular access, general and regional anesthesia, urology, respiratory care, cardiac care, and surgery. Teleflex also provides products and services for device manufacturers.

SUPORT FOR HOSPITALS

Committed to partnering with healthcare providers in anaesthesiology, critical care, urology, surgical and cardiac care applications, we aim to offer the optimum solution for any requirement.

SUPORT FOR PATIENTS

Teleflex is dedicated to providing products and services that save lives, reduce costs and deliver superior patient outcomes by reducing infections, enabling less invasive procedures and improving patient safety and comfort.

SUPORT FOR CLINICIANS

As your partner in healthcare, we provide high quality services, products and programmes. From custom-configured kits to product evaluation.

CARDIAC CARE

The Cardiac Assist division engineers, develops, manufactures, sells and supports technologically advanced left heart products for critically ill cardiac patients. Additionally, the Cardiac group manages and sells a line of right heart catheters as well as angiographic diagnostic catheters and cath lab focused kink-resistant sheath products

Web Site: www.teleflex.com
Customer Services E-mail: orders.uk@teleflex.com
Teleflex
St Mary's Court
The Broadway
Old Amersham
Buckinghamshire
HP7 0UT

TEM UK LTD — STAND 17A

Tem Innovations GmbH develops, produces and promotes near patient diagnostic devices focusing on bleeding management. The robust and easy to use ROTEM® delta system processes whole blood samples and provides rapid and clear results. It provides an overview of the coagulation status after 10 minutes for implementing and controlling a targeted transfusion therapy, through the addition of specific reagents, which identify multiple coagulopathies. Thus, saving blood products by avoiding unnecessary transfusion, treatment costs, time and also human lives.

TEM UK Ltd
2 Rivergreen Business Centre
Queen's Meadow
Hartlepool
TS25 2DL
Tel: +44 (0) 1429 871517
Fax: +44 (0) 1429 277085
Web: www.rotem.de

THORATEC — STAND 25

Thoratec is a world leader in therapies to address advanced-stage heart failure. The company's products include the HeartMate® LVAS (Left Ventricular Assist System) and Thoratec® VAD (Ventricular Assist Device) with more than 18,000 devices implanted in patients suffering from heart failure. Thoratec also manufactures and distributes the CentriMag® and PediMag® /PediVAS® product lines. For more information, visit the company's website at www.thoratec.com.

Company details:

Head Office:
Thoratec Corporation
6085 Stoneridge Drive
Pleasanton
94588 CA, USA
Tel: +1 925 847 8600

UK Office:
Thoratec Europe Ltd
Burnett House, Lakeview Court
Ermine Business Park
Huntingdon, Cambs PE29 6UA
Tel: +44 (0)1480 455 200

Email: sandie.hastings@thoratec.com
Website: www.thoratec.com

UK MEDICAL — STAND 56

UK Medical is the UK supplier of the PleurX catheter for the home management of recurrent pleural effusion. PleurX can be an excellent option for patients with trapped lung and those that have failed talc pleurodesis. Furthermore, PleurX is also indicated as an alternative to talc slurry or thoracoscopic talc insufflation as a first line management option.

With UK Medical's commitment to providing the highest level of hospital and community training and support and with over forty published clinical papers supporting its use, PleurX is an evidence-based option that you can offer your patients with confidence.

UK Medical Ltd
Albreda House
Lydgate Lane
Sheffield
S10 5FH
Tel: 0114 268 8880
info@ukmedical.com
www.ukmedical.com

VASCUTEK — STANDS 22 & 23

Significant advances in valved conduit design are rare, however Stentless BioValsalva™, a radically new design of valved conduit is an exception.

Stentless BioValsalva™ is an aortic porcine biological valved conduit designed for the Bentall procedure. It is a pre-sewn device combining Biplex(tm) an innovative self sealing graft material and the Vascutek Ltd elan™ porcine aortic stentless biological valve.

The BioValsalva™ design reduces procedure complexity, and has been shown to reduce ischaemic and aortic cross-clamp time. The Biplex material has been shown to demonstrate improved haemostasis. The product also enables the treatment of more vulnerable patient groups.

Vascutek is proud to distribute the OnX range of valves for the UK.

Please visit Vascutek's booth (Number 22) where Stentless BioValsalva™, aspire™, elan™ and OnX valves as well as our full range of Gelweave™ cardiothoracic grafts will be on display.

VASCUTEK, a TERUMO Company
Newmains Avenue, Inchinnan
Renfrewshire PA4 9RR, Scotland, UK
Tel: +44 141 812 5555
Fax: +44) 141 812 7170
www.vascutek.com

WISEPRESS ONLINE BOOKSHOP LTD — STANDS 1 & 2

Wisepress.com, Europe's leading conference bookseller, has a complete range of books and journals relevant to the themes of the meeting. Books can be purchased at the stand or, if you would rather not carry them, posted to you - Wisepress will deliver worldwide. In addition to attending 200 conferences per year, Wisepress has a comprehensive medical and scientific bookshop online with great offers.

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Website: www.wisepress.com

General Information

The 2012 ACTA & SCTS Annual Meeting & Cardiothoracic Forum is at Manchester Central from Wednesday 18th April - Friday 20th Apirl 2012.

A prayer facility is available in Organisers Office 4 - please ask at registration if you are unsure how to access it.

CONTINUING PROFESSIONAL DEVELOPMENT

Delegates will be awarded 14 credits of CPD for attendance of the whole meeting. Please note that you will be emailed a link to online feedback forms at the end of the meeting. On completion of this form, you will be emailed your certificates of attendance

ANNUAL DINNER

The ACTA & SCTS Dinner will take place on Thursday 19th April between 19:30hrs and 00:00hrs at the Midland Hotel. An evening not to be missed, this year, the dinner includes drinks on arrival and a three-course meal including wine and entertainment. Dress code will be lounge suits and cocktail dresses.

Tickets are £60 per head and can be purchased from the registration desk until 18:00hrs on Wednesday 18th April. Places will be supported by Cardiac Advanced Life Support (CALS) for nurses and other Allied Health Professionals to attend. The number of supported tickets are limited and are available on a first come, first serve basis.

BUSINESS MEETING

The Annual Business Meeting for SCTS will be held on Thursday 19th April 2012 between 17:30hrs and 19:00hrs.

Please note that the Business Meeting is open to Society members only.

HEART RESEARCH UK LECTURE

The Heart Research UK session will take place on Thursday 19th April at 10:45hrs.

LILLY TUDOR EDWARDS THORACIC SURGICAL LECTURE

Professor Sugarbaker will deliver his lecture on Friday 20th April at 11:55hrs.

REFRESHMENTS AND LUNCH

Complementary tea and coffee will be provided during the official breaks in the exhibition hall. A cold lunch is included in the registration fee, and will also be served in the exhibition hall.

REGISTRATION

Wednesday 18th April	16:00 - 19:00hrs
Thursday 19th April	08:30 - 18:00hrs
Friday 20th April	08:30 - 14:00hrs

POSTERS

All posters should be mounted in their indicated space before 08:30hrs on Thursday 19th April and should be removed between 12:30hrs and 13:30hrs on Friday 20th April. Any posters not collected by 13:30hrs will be disposed of.

KEY TO BADGES

Badges should be worn at all times during the conference. Exhibitors will be easily identified by their yellow badges.

White - attending entire conference/forum

Red - attending Thursday only

Blue - attending Friday only

SATELLITE MEETINGS

Thursday 19th April	**Education Sub-Committee**
08:00 - 08:50	Organisers 1 Chair: Mr C Munsch
Thursday 19th April	**Thoracic Sub-Committee**
10:00 - 10:45	Organiser 2 Chair/s: Mr Graham Cooper/ Mr John Duffy/ Mr Rajesh Shah
Friday 20th April	**Exhibitors' Meeting**
14:00 - 14:30	Exchange 6/7 Chair/s: Mr Simon Kendall / Mr Ian Wilson (attending: Miss Tilly Mitchell)
15:00 - 16:30	**Scholarship Award Meeting** Organisers 2 Chair: Professor David Taggart (attending: Honorary Secretary, President-elect, Education Secretary, Cardiothoracic Dean, Chairman of the SAC, Chair of the National Selection Committee)

15:00 - 16:30 **Presentation Grading Meeting**
Organisers 2
Chair: Mr Simon Kendall
(attending: President SCTS, Chairman of ACTA, President-elect, Chairman of the Intercollegiate Board Chairman of the SAC Cardiothoracic Dean)

SPEAKER'S ROOM

All presenters are requested to review their audio-visual material in the Speaker's room at the following times:

Morning presentations:
by 15:00hrs on the day before presentation

Afternoon presentations:
by 09:30hrs on the day of presentation

TRADE EXHIBITION

The Annual Trade Exhibition will be held in conjunction with the Meeting and will be open from 17:00 to 19:00 Wednesday 18th April and 08:30hrs Thursday 19th April to 15.30hrs on Friday 20th April 2012.

WELCOME RECEPTION

There will be a Welcome Reception in the Trade Exhibition, Manchester Central on the evening of Wednesday 18th April 2012 between 17:00hrs and 19:00hrs. The Welcome Reception is included in the registration fee.

ACTA 2011 Prize Winner

The Hargadon Prize	B Shelley

SCTS 2011 Prize Winners

Ronald Edwards Medal	F Taghavi
John Parker Medal	N Patel
Society Thoracic Medal	K Morgan Bates
Best CT Forum Presentation	C Tennyson
Best student poster Presentation	M Nagendran

The winners will be presented with their medals at the annual dinner

SCTS 2012 Awards

Ronald Edwards Medal	best scientific oral presentation
John Parker Medal	best clinical presentation
Society Thoracic Medal	best thoracic presentation
Society CT Forum Medal	best CT Forum presentation
The Patrick Magee Medal	best student poster presentation
BASO - the Association of Cancer Surgery Prize	best paper on The Science and Practice of Cancer Surgery

The winners will be announced by email after the annual meeting

SCTS 2012 Scholarships

Ethicon Trainee Scholarships were awarded for the first time to the following:

I Ahmed

M Baghai

D Harrington

H Vohra

The Marian & Christina Ionescu Travelling Scholarship 2011

C Munsch

COMMITTEES

ACTA Executive Committee 2011-2012

Dr Donna Greenhalgh	Chairman, Perfusion	2011-2012
Dr Alistair Macfie	Treasurer, Thoracic & CIA leads	2009-2012
Dr Nick Fletcher	Secretary	2011-
Dr Ravi Gill	Meetings Secretary, Paediatric, NIAA leads	2009-2012
Dr Noel Gavin	Web & Newsletter, Treasurer elect	2011
Dr Justiaan Swanevelder	Chair of TOE Sub-Committee	2010

ACTA Transoesophageal Echocardiography (TOE) Sub-committee 2011-2012

Dr Justiaan Swanevelder	Chairman	2010-
Dr Donna Greenhalgh	Ex Chairman	2006-2010
Dr Niall O'Keeffe	Chairman of the Exam Committee, Manchester Royal Infirmary	2011-
Dr Henry Skinner	Ex Chairman of TOR exam committee, Nottingham City Hospital	
Dr Nick Fletcher	St George's Hospital, London	
Dr Sean Bennett	Castle Hill Hospital, Hull	
Dr Sue Wright	Heart Hospital, London	
Dr Roger Hall	Papworth Hospital, Cambridge	
Dr Paul Diprose	Southampton	
Dr Mark Bennett	Derriford Hospital, Plymouth	
Dr Chris Rosario	Blackpool Victoria Hospital, Blackpool	
Dr Andrew Ronald	Aberdeen Royal Infirmary, Aberdeen	
Dr Dominic Ray	Golden Jubliee Hospital, Glasgow	
Dr Agneskia Creer-Gilbert	St George's Hospital, London	
Dr Andrea Kelleher	Royal Brompton and Harefield NHS Trust, London	
Dr Mahesha Pranbu	Freeman Hospital, Newcastle	
Dr Siva Karthikeyan	University Hospital of Wales, Cardiff	
Dr Gavin Wright	Royal Brompton and Harefield NHS Trust, London	
Dr Martin Platt	Bristol Infirmary, Bristol	

ACTA Cardiac Intensive Care Anaesthetists (CIA) Steering Committee 2011-2012

Dr Alistair MacFie	Chairman, Golden Jubilee Hospital, Glasgow
Dr Tim Strang	UHSM, Manchester
Dr Nick Fletcher	St George's Hospital, London
Dr Tim Palfreman	Leeds General Infirmary, Leeds
Dr Chris Rigg	Castle Hill Hospital, Hull
Dr Alain Vuylsteke	Papworth Hospital, Cambridge

SCTS Executive Committee 2011-2012

Professor David Taggart	President	2010-2012
Mr James Roxburgh	President Elect	2010-2012
Mr Graham Cooper	Honorary Secretary	2008-2013
Mr Malcolm Dalrymple-Hay	Honorary Treasurer	2009-2014
Mr Simon Kendall	Meeting Secretary	2007-2012
Professor John Pepper	Education Secretary	2009-2012
Mr Sunil Ohri	Communications Secretary	2005-
Ms B Evans	Trainee Representative	2011-2014
Ms Tara Bartley	Nursing Representative	2006-2012
Ms Christina Bannister	Deputy Nursing Representative	2011-2012
Mr Steven Livesey	Chairman of the SAC	2010-2013
Mr Ben Bridgewater	Chairman of the Data Committee	2008-
Professor Marjan Jahangiri	Elected member	2009-2012
Mr Ian Wilson	Elected member/ Deputy Meeting Secretary	2009-2012
Mr Rajesh Shah	Elected member	2010-2013
Mr Stephen Westaby	Elected member	2010-2013
Mr David Waller	Elected member	2011-2014
Mr Graham Venn	Elected member	2011-2014
Mr Andrew McLean	Co-opted Congenital Representative	2011-
Mr Jagan Rao	Co-opted Thoracic Representative	2011-

Board of Representatives 2011-2012

Mr Steve Livesey	Chairman of the SAC
Mr John Smith	Chairman of Inter-Collegiate Board

Mr Sion Barnard	Cardiothoracic Dean
Mr Michael Lewis	Cardiothoracic Tutor
Mr Richard Page /Mr Jim McGuigan	Thoracic Audit
Mr Hussein El-Shafei	Aberdeen Royal Infirmary
Mr Nelson Alphonso	Alder Hey Childrens' Hospital
Mr Tim Jones	Birmingham Childrens' Hospital
Mr Pala Rajesh /Mr Richard Steyn	Birmingham Heartlands Hospital
Mr Franco Sogliani	Blackpool Victoria Hospital
Mr Gavin Murphy	Bristol Royal Infirmary
Mr Mike Cowen	Castle Hill Hospital
Vacancy	Cork University Hospital
Mr Clinton Lloyd	Derriford Hospital
Mr Edward Brackenbury	Edinburgh Royal Infirmary
Mr Andrew Ritchie	Essex Cardiothoracic Centre
Mr Sion Barnard	Freeman Hospital
Mr David Waller	Glenfield Hospital
Mr Geoff Berg	Golden Jubilee National Hospital
Mr Victor Tsang	Great Ormond Street
Mr Chris Blauth	Guy's and St Thomas' Hospital
Mr Juliet King	Guy's Hospital
Vacancy	Royal Brompton and Harefield NHS Trust
Mr Andrew Goodwin	James Cook University Hospital
Mr Chandi Ratnatunga	John Radcliffe Hospital
Mr Jatin Desai	King's College Hospital
Mr David O'Regan	Leeds General Infirmary
Mr John Chalmers	Liverpool Heart & Lung Hospital
Mr Graham Venn	London Bridge Hospital
Mr Ragheb Hasan	Manchester Heart Centre
Mr Karen Redmond	Mater Misericordiae Hospital
Mr Aprim Youhana	Morriston Hospital
Mr Adrian Levine	N. Staffordshire Royal Infirmary
Mr Moninder Bhabra	New Cross Hospital, Wolverhampton
No members	Norfolk & Norwich Hospital
Mr David Hopkinson	Northern General Hospital

Mr David Richens	Nottingham City Hospital (Cardiac)
Mr John Duffy	Nottingham City Hospital (Thoracic)
Mr David Jenkins	Papworth Hospital
Mr Simon Jordan	Royal Brompton and Harefield NHS Trust
No members	Royal Devon and Exeter
Mr Jim McGuigan/ Mr J Mark Jones	Royal Victoria Hospital
Mr Clifford Barlow	Southampton General Hospital
Mr Kulvinder Lall	St Bartholomews Hospital
Mr Robin Kanagasabay	St George's Hospital
Mr Eilis McGovern	St James' Hospital, Dublin
Mr Andrew Chukwuemeka	Hammersmith Hospital
Mr Shyam Kolvekar	The Heart Hospital
Mr Uday Trivedi	The Royal Sussex County Hospital
Mr Domenico Pagano	University Hospital of Birmingham
Mr Dheeraj Mehta	University Hospital Wales
Mr Ramesh Patel	Walsgrave Hospital
Mr Rajesh Shah	Wythenshawe Hospital

Committee Chairs

Mr Leslie Hamilton	CEA Committee	2011-continuing
Mr Ben Bridgewater	Data Committee	2008-continuing
Professor John Pepper	Education Committee	2008-2011
Mr Graham Cooper/ Mr John Duffy	Thoracic Sub-Committee	2010-continuing
Mr James Roxburgh/ Mr Andrew McLean	Congenital Sub-Committee	2011-

Working Group Chairs

Mr Graham Venn	Job Planning Guidelines	2007-
Mr Steven Livesey	Revalidation	2008-continuing
Professor David Taggart	Safe Surgery	2010-
Mr Graham Cooper	Commissioning Guidelines	2011-

Presidential Objectives

1 Improving quality of care for patients: exploring different outcome measures
2 Promoting multidisciplinary teams to bring cardiac surgeons back to the centre of the decision making process
3 Improving communication with members - strengthening the Board of Representatives
4 Database committee: establishment and development
5 Developing data collection in thoracic surgery
6 Raising the professional profile of the Society
7 Exploring mechanisms to ensure safer surgery out of hours
8 To seek financial recognition through job planning for cardiothoracic surgery data collection, analysis and publication

Programme Committee 2012 Meeting

		Lead Reviewers	Experimental & Miscellaneous
Mr Simon Kendall	Meeting Secretary	Dr David Chambers	Transplantation
Mr Ian Wilson	Deputy Meeting Secretary	Mr Steve Clark	Adult Cardiac
		Mr Malcolm Dalrymple-Hay	Thoracic
		Mr Sion Barnard	Adult Cardiac
		Mr Brian Fabri	Experimental & Miscellaneous
		Mr Adrian Marchbank	Anaesthetics/ Intensive Care
		Dr Niall O'Keeffe	Congenital
		Mr Andrew Parry	CT Forum
		Ms Tara Bartley	

Abstract Reviewers 2012 Meeting

Adult Cardiac	Mr Brian Fabri (lead)	Experimental	Dr David Chambers (lead)
	Mr Malcolm Dalrymple-Hay (lead)		Dr Ravi Gill
	Mr Vinny Bapat		Mr Jonathan Hyde
	Mr Geoff Berg		Mr Clinton Lloyd
	Mr Ben Bridgewater		Mr Domenico Pagano
	Mr Steven Griffin		Mr Alex Shipolini
	Dr Andrew Klein	Thoracic	Mr Sion Barnard (lead)
	Mr Paul Modi		Dr Ian Hunt

	Mr Narain Moorjani		Mr Ian Hunt
	Mr Mark Pullan		Mr Rajesh Shah
	Dr Tim Strang		Mr David Waller
	Mr Joseph Zacharias	Transplantation	Mr Steve Clark (lead)
	Mr Afzal Zaidi		Dr Jonathan Mackay
Anaesthetics/	Dr Niall O'Keeffe (lead)		Mr Jorge Mascaro
Intensive Care	Dr Donna Greenhalgh		Ms Karen Redmond
	Dr Jonathan Mackay		Mr Steven Tsui
	Dr Nick Morgan-Hughes		Mr Nizar Yonan
Congenital	Mr Andrew Parry (lead)	Forum	Ms Tara Bartley (lead)
	Dr Mark Forrest		Ms Christina Bannister
	Mr Marcus Haw		Mr Calum Buchanan
	Mr Andrew McLean		Mr Alastair Marshall
	Mr Babulal Sethia		Ms Helen Munday
	Mr Prem Venugopal		

Specialist Advisory Committee in Cardiothoracic Surgery 2011-2012

(A Sub-committee of the Joint Committee for Surgical Training)

Mr Steve Livesey	(Chairman) Society for Cardiothoracic Surgery - commenced post September 2010	2010-2013
Mr John Anderson	Joint Royal Colleges Representative	2008-2013
Mr Sion Barnard	Cardiothoracic Dean, Society for Cardiothoracic Surgery	Oct 2009-Sept 2014
Mr David Barron	Congenital Surgery Representative, Society for Cardiothoracic Surgery	2007-2012
Miss Betsy Evans	Trainee Representative	2010-2013
Mr Tim Graham	Core Training (co-opted member)	2011-
Mr Steve Hunter	National Recruitment Officer	2004- 2012
Mr John Smith	Chairman of the Intercollegiate Examinations Board	2010-2013
Mr Alan Kirk	Joint Royal Colleges Representative	2008-2013
Dr Vicky Osgood	Lead Dean	2008-2013
Professor John Pepper	Education Secretary, Society for Cardiothoracic Surgery	2007-2012
Mr Pala Rajesh	Lead Thoracic Surgery Representative, Joint Royal Colleges Representative	2006-2012
Professor John	Academic Surgery Representative,	2007-2012

Wallwork	Society for Cardiothoracic Surgery	
Mr Mark Redmond	Royal College of Surgeons in Ireland Representative	2011-2014
Mr Jonathan Hyde	Joint Royal Colleges Representative	2009-2014
Mr Jonathan Unsworth-White	Society for Cardiothoracic Surgery Representative	2009-2014
Mr Peter O'Keeffe	Joint Royal Colleges Representative	2009-2014
Mr Philip Kay	Society for Cardiothoracic Surgery Representative	2009-2014
Mr Domenico Pagano	Academic Surgery Representative (co-opted member)	2009-2012
Professor Cliff Shearman	Head of School of Surgery representative	2009-2014
Mr Michael Lewis	Intercollegiate Specialty Tutor and MRCS Representative Lead (co-opted member)	2010-2013
Mr Geoff Tsang	Joint Royal Colleges Representative	2011-2016
Mr Stephen Rooney	Society for Cardiothoracic Surgery Representative	2011-2016

Intercollegiate Board in Cardiothoracic Surgery 2011-2012

Mr John Smith	Chairman	2010-2013
Professor John Pepper	Representative of the Society for Cardiothoracic Surgery	2007-2012
Mr Steve Livesey	Chairman SAC in Cardiothoracic Surgery	2010-2013
Mr Jonathan Anderson	Representative of the Royal College of Surgeons of England	2007-2012
M Vincent Young	Representative of the Royal College of Surgeons in Ireland	2008-2013
Mr David Richens	Representative of the Royal College of Physicians and Surgeons of Glasgow	2007-2012
Mr Pala Rajesh	Representative of the Royal College of Surgeons of Edinburgh	2007- 2012
Mr Sion Barnard	Representative of the Society for Cardiothoracic Surgery	2009-2014

Society Representatives on Other Bodies Society Representatives on Other Bodies

Organisation	*Representative*	*Tenure (Inclusive)*	*Comments*
Senate and Federation of Surgical Specialist Associations	James Roxburgh/ David Taggart	2010-2012	

Council of the Royal College of Surgeons of England	James Roxburgh/ David Taggart	2010-2012	
Surgical Sub-Committee of the Central Consultants and Specialists Committee	James Roxburgh/ David Taggart	2008-2010	
Expert Group for Cardiac Surgery at NCEPOD	Stevel Livesey / James Roxburgh	Not defined	
Council of the College of Clinical Perfusion Scientists of GB & Ireland	Tim Jones / David Jenkins	2009	
British Standards Authority	Chandi Ratnatunga	Not defined	To continue
Medical Devices Agency (MHRA)	Steve Hunter	Not defined	
Organisation	***Representative***	***Tenure (Inclusive)***	***Comments***
Outpatient HRG Group	Ben Bridgewater	For duration of project	
Strategic Group for National Heart Valve Contracts	Steve Livesey	Not defined	Unlimited tenure. Ad hoc group.
Professional Standards and Peer Review Committee (British Cardiac Society)	Graham Cooper	2008 - 2013	
Childrens' Surgical Forum	Andrew Parry	2007	
Joint Advisory Group for Upper GI Endoscopy (JAG)	Jim McGuigan	2004 - 2011	
RCSE Specialty Advisory Board	Graham Cooper	TBC	
TEARS	Chris Blauth	Not defined	
Intercollegiate Lung Cancer Group (LUCADA data project)	Richard Berrisford (William Fountain)	2001 -	
Tripartite Group (Dept of Health, Healthcare Commission and SCTS)	Ben Bridgewater James Roxburgh	Undetermined	
Angioplasty Guidelines and Practice Sub-committee of the BCS	Graham Venn	Undetermined	
Specialist Adviser to NICE	Graham Venn	2001 -	
Academic Research Board Royal College of Surgeons of England	Domenico Pagano	2007 -	
UEMS	John Duffy (Thoracic) Neil Moat (Cardiac)	2008 -	
BMA Consultants Committee (CCSC)	Marjan Jahangiri	2009 - 2011	

BTS (Lung Cancer Guidelines)	John Duffy Jim McGuigan Richard Berrisford Richard Page
BTS (Recommendations on Air Travel and Lung Disease)	Edward Black
Royal College of Surgeons in Ireland Vice President	Eilis McGovern
Royal College of Surgeons in Ireland Member of Council	A E Wood

Organisation	*Representative*	*Tenure (Inclusive)*	*Comments*
Royal College of Surgeons of England Working Party on the International Role of the College	David Anderson	2009	
DoH Clinical Advisory Group Major Trauma Network 'Acute Care & Surgery' Subgroup	Andrew Cohen	6-12 months commencing Sept 2009	
Healthcare for London Steering Group	Andrew Cohen	Sept 2009 - Sept 2010	12 months term initially - chaired by London Trauma Director, Fiona Moore
CORESS	Stephen Clark	2010	
CCAD - Paediatric Representative	Andrew McLean	2010	CCAD TAVI
Steering Committee	Neil Moat	2009	

MEETING HISTORY

List of Presidents of the SCTS since 1934

1934	Mr H Morrison Davies
1936	Mr J R H Roberts
1938	Mr A Tudor Edwards
1945	Mr J B Hunter
1947	Mr W M Anderson
1948	Mr R B Purse
1950	Mr A Graham Bryce
1952	Sir C Price Thomas
1954	Mr H Reid
1956	Mr B Dick
1958	Sir R Brock
1959	Mr G A Mason
1961	Sir T Holmes Sellors
1963	Mr R F J Henry
1964	Mr N R Barrett
1966	Mr V C Thompson
1968	Mr P R Allison
1969	Mr A L d'Abreu
1970	Mr A Logan
1971	Mr O S Tubbs
1972	Mr F R Edwards
1973	Mr J L Collis
1974	Mr R H R Belsey
1975	Mr R S Barclay
1976	Mr W P Cleland
1977	Mr H R S Harley
1978	Mr R Abbey-Smith
1979	Mr R P Moore
1980	Mr J R Belcher
1981	Mr M Bates
1982	Mr J M Hill
1983	Mr J F Dark
1984	Mr D N Ross
1985	Mr M Paneth
1986	Mr M V Baimbridge
1987	Sir K Ross
1988	Professor W H Bain
1989	Mr W G Williams
1991	Professor D I Hamilton
1992	Professor G H Smith
1994	Mr B Ross
1995	Mr J Bailey
1996	Professor H Matthews
1997	Professor D Wheatley
1999	Mr J Dussek
2000	Mr J Monro
2002	Mr C Hilton
2004	Mr P Magee
2006	Professor Sir B Keogh
2008	Mr L Hamilton
2010	Professor D Taggart

MEETING HISTORY

List of Presidents of ACTA since 1993

1993	Rob Feneck	2006	Sean Bennett
1996	David Whitaker	2007	Jean-Pierre Van Besouw
1999	John Kneeshaw	2009	Peter Alston
2001	John Gothard	2010	Jon Mackay
2004	Fiona Gibson	2011	Donna Greenhalgh

SCTS Annual Meeting's 10-Year History

2002	Bournemouth International Centre	Bournemouth
2003	Edinburgh International Conference Centre	Edinburgh
2004	Beau Sejour Centre	Guernsey
2005	Olympia Conference Centre	London
2006	CityWest Conference Centre	Dublin
2007	Manchester International Convention Centre	Manchester
2008	Edinburgh Internatinal Conference Centre	Edinburgh
2009	Bournemouth International Centre	Bournemouth
2010	Arena & Convention Centre	Liverpool
2011	ExCel London	London
2012	Manchester Central - Joint with ACTA	Manchester

Organised by:

Association of Cardiothoracic Anaesthetists
Donna Greenhalgh
Email: donna.greenhalgh@btopenworld.com

Niall O'Keeffe
Email: nok@doctors.org.uk

Society for Cardiothoracic Surgery in Great Britain and Ireland

Simon Kendall - Meeting Secretary
Email: Simon.Kendall@nhs.net

Ian Wilson - Deputy Meeting Secretary
Email: ian.c.wilson@uhb.nhs.uk

Isabelle Ferner - Society Administrator & Conference Organiser
Email: sctsadmin@scts.org

Tilly Mitchell - Finance and Exhibition Coordinator
Email: tilly@scts.org

Tara Bartley - Nursing Representative
Email: tara.bartley@ntlworld.com

Christina Banniser - Deputy Nursing Representative
Email: Christina.Bannister@suht.swest.nhs.uk

Vipin Zamvar - Publishing Secretary
Email: zamvarv@hotmail.com

Future Meetings

The 2013 meeting will be in Brighton, 17 to 19 March.

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Time	*Session*

Page Planner

Time	*Session*

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Time	*Session*

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Time	*Session*

ACTA - SCTS Joint Annual Meeting 2012

SUMMARY MEETING PROGRAMME

Thursday 19 April

07:30-08:45	Charter 4	Sorin Cardiac - Aortic Valve
07:30-08:45	Exchange 11	Thoracic - Mets and Malignancy
07:30-08:45	Exchange 10	Congenital Symposium
07:30-08:45	Exchange 9	Cardiac Scientific
07:30-08:45	Charter 2	Thoracic - Lung Volume Reduction
07:30-08:45	Organisers 1	Education Sub Committee
09:00-10:00	Charter 4	Patients' Forum Greeting
08:45-10:00	Exchange 6/7	Database Managers : 7th Annual Meeting
08:45-10:00	Exchange	CARDIOSOLUTIONS Opening Auditorium Plenary Session - Teamwork & Outcomes
10:00-10:45	Organisers 3	Thoracic Sub Committee
10:45-12:30	Exchange 10	Congenital Papers
10:45-12:30	Exchange 11	Safe Surgery Workshop
10:45-12:30	Exchange 9	Cardiac - TAVI
10:45-12:30	Exchange 6/7	Database Managers : 7th Annual Meeting
10:45-12:30	Charter 4	ETHICON Cardiothoracic Forum
10:45-12:30	Exchange Auditorium	HEART RESEARCH UK - Organ Protection
10:45-12:30	Charter 2	Medela Thoracic - Analgesia
13:30-15:00	Exchange 11	Leader as Educator
13:30-15:00	Exchange Auditorium	Plenary Session - How do we provide the Out of Hours' Service?
13:30-15:00	Charter 4	Patients' and Cardiothoracic Forum
13:30-15:00	Exchange 10	Congenital
13:30-17:30	Exchange 6/7	Data Committee Meeting
13:30-15:00	Exchange 9	Organ Failure
13:30-15:00	Charter 2	Thoracic Research Collaborative
15:00-15:45	Charter 2	Thoracic Films
15:00-15:45	Exchange 4/5	Cardiac Films - AV Repair and revasc
15:45-17:30	Exchange 11	Echo Workshop
15:45-17:30	Exchange 9	Trainees Meeting
15:45-17:30	Exchnage 4/5	Cardiac - Revascularisation
15:45-17:30	Exchange 10	Congenital Papers
15:45-17:30	Exchange Auditorium	Current Status of Artificial Organ Support
15:45-17:30	Charter 4	ETHICON Cardiothoracic Forum
15:45-17:30	Charter 2	Thoracic - Miscellaneous
17:30-19:00	Charter 3	SCTS - ABM

Friday 20 April

08:00-10:00	Exchange 10	Cardiac - Stopping the Bleeding
08:00-09:00	Exchange 6/7	Thoracic - Oesophageal
09:10-10:00	Exchange 6/7	Part 1 - Pushing the Boundaries
08:00-10:00	Exchange 11	Workshop - Getting the Best from your Unit
08:00-10:00	Charter 2	MEDELA: Thoracic - VATS & Limited Resections
08:00-10:00	Exchange 9	Edwards Cardiac - Mitral, Tricuspid and AF
08:45-10:00	Charter 4	Cardiothoracic Forum
10:00-10:45	Charter 2	Thoracic Films
10:00-10:45	Exchange 9	Cardiac Films: Mitral x2 and Sarcoma
10:45-12:30	Exchange 11	Sleep Apnoea Workshop
10:45-12:30	Charter 4	ETHICON Cardiothoracic Forum
10:45-11:55	Charter 2	Thoracic - Tracheal Surgery
10:45-12:30	Exchange Auditorium	Cardiac - Pushing the Boundaries
10:45-12:30	Exchange 10	Thoracic - ICU
10:45-11:55	Exchange 9	Cardiac - Miscellaneous
11:55-12:30	Charter 2	Tudor Edwards Thoracic Lecture - Prof Sugarbaker
11:55-12:30	Exchange 9	Hunterian Lecture
12:30-13:30	Charter 2	Thoracic Films
12:30-13:30	Exchange 9	Cardiac Films: AVR and Aortic
12:30-13:30	Exchange 6/7	Student Poster Presentations
14:00-15:00	Exchange 6/7	Exhibitors Meeting
13:30-16:30	Exchange Auditorium	Heart Failure
13:30-16:30	Charter 4	ETHICON Cardiothoracic Forum
15:00-16:00	Organisers 1	Scholarship Meeting
13:30-16:30	Charter 2	Thoracic - Recovery and Pre-op Assessment
13:30-16:30	Exchange 9	Cardiac - Aortic Surgery
16:45-17:15	Organisers 1	Presentation Meeting