2007 ANNUAL MEETING

President
Professor Sir Bruce Keogh (2006–2008)

Honoured Guests
Dr Fred Grover
Professor & Chair, Dept of Surgery, University of Colorado HSC
University of Colorado Health Sciences Center
Denver, USA

Dr Keith Naunheim
Chief, Division of Cardiothoracic Surgery
St Louis University Health Sciences Center
St Louis, USA

Prof Dr D Van Raemdonck
Head of Clinic, Department of Thoracic Surgery
& Surgical Director
Leuven Lung Transplant Programme
University Hospitals Leuven
Leuven, Belgium

The Society for Cardiothoracic Surgery in Great Britain and Ireland
Annual Meeting 2008 will be held at the EICC, Edinburgh
9th–12th March 2008

Programme Sponsors

Edwards

Medtronic
Where life depends on Medical Technology

SORIN GROUP
AT THE HEART OF MEDICAL TECHNOLOGY

CONTENTS

GENERAL INFORMATION

GENERAL INFORMATION

The 2007 Annual Meeting of the Society will be held at the Manchester International Convention Centre from Sunday 11th March to Wednesday14th March 2007.

CONTINUING PROFESSIONAL DEVELOPMENT

Delegates will be awarded 21 credits from EACCME for attendance at the whole meeting. Please note that certificates of attendance will be available for collection at registration at the end of the conference. You will need to complete a feedback form in order to collect your certificate.

The Annual Meeting of the Society for Cardiothoracic Surgery in Great Britain & Ireland is accredited by the European Accreditation Council for Continuing Medical Education (EACCME) to provide the following CME activity for medical specialists: a maximum of 21 hours of European external CME credits. Each medical specialist should claim only those hours of credit that he/she has actually spent in the educational activity. EACCME is an institution of The European Union of Medical Specialists (UEMS) www.uems.be.

ANNUAL SOCIAL EVENT

The SCTS Annual Social Event will take place on Wednesday 14th March between 19:00hrs and 23:30hrs at the Manchester United Football Club, Old Trafford, Manchester. As well as a guided tour of the stadium and museum, the highlight of the evening will be an after dinner speech by Sir Bobby Charlton. A memorable evening not to be missed, it will take the form of a black-tie dinner and include a visit to the museum, a tour of the stadium, a glass of champagne on arrival and a three-course meal including wine. Transport will be provided, leaving the MICC from 18:15hrs. Tickets are £60 per head and can be purchased from the registration desk until18:00hrs on Monday 12th March. We strongly advise you to book early because we anticipate that this will be a popular event.

BUSINESS MEETINGS 1 AND 2

Annual Business Meeting 1 will be held on Sunday 11th March 2007 between 18:00 and 19:30hrs. Annual Business Meeting 2 will be held on Wednesday 14th March 2007 between 15.45 and 17.00hrs.

Please note that the Business Meetings are open to Society members only.

HEART RESEARCH UK LECTURE

Dr Fred Grover will deliver his lecture on Monday 12th March 2007 at 11.45hrs.

THE PULSE SURGICAL LECTURE

Dr Keith Naunheim will deliver his lecture on Tuesday 13th March 2006 at 11.45hrs.

REFRESHMENTS AND LUNCH

Complimentary tea and coffee will be provided during the official breaks in the exhibition hall. A buffet lunch is included in the registration fee, and will also be served in the exhibition hall.

REGISTRATION

Sunday 11th March	16:00–20:00hrs
Monday 12th March	08:30–18:00hrs
Tuesday 13th March	08:30–18:00hrs
Wednesday14th March	08:30–12:00hrs

POSTERS

All posters should be mounted in their indicated space before 08:30hrs on Monday12th March and should be removed between 12.45hrs and 14:00hrs on Wednesday14th March. Any posters not collected after 16:00hrs 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	Green	– attending Monday only
Red	– attending Tuesday only	Blue	– attending Wednesday only

SATELLITE MEETINGS

Sunday 11th March

19:30–19:45hrs Presentation Assessors & Session Chairmen Briefing
Auditorium
Chairman: Mr Graham Cooper

Monday 12th March

18:00–21:00hrs Bayer Evening Symposium:
'Trasylol (aprotinin); Putting Things in Perspective'
Mancunian Suite
'Aprotinin; A Friend or Foe?' Dr David Royston
'Aprotinin and Hypersensitivity' Prof Wolf Dietrich

Tuesday 13th March

14:00–15:00hrs Exhibitors' Meeting
Breakout Room 1
Chairman: Mr Simon Kendall
(attending: Mr Graham Cooper, Mrs Rachel Woolf)

16:00–17:00hrs Scholarship Award Meeting
Breakout Room 1
Chairman: Professor Sir Bruce Keogh
(attending: Honorary Secretary, President-elect, Cardiothoracic Dean Chairman of the SAC)

18:00–21:00hrs Vascutek Ltd Evening Symposium
'New concepts in aortic valve repair & replacement procedures'
Mancunian Suite

Wednesday 14th March

15:15–15:45hrs Presentation Grading Meeting
Breakout Room 1
Chairman: Mr Graham Cooper
(attending: President, 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 08:30hrs Monday12th March to 14:00hrs on Wednesday 14th March 2007.

WELCOME RECEPTION

There will be a Welcome Reception in the foyer area of the MICC on the evening of Sunday 11th March 2007 between 19:30 and 20:30hrs. The Welcome Reception is included in the registration fee.

SCTS 2006 Prize Winners

Ronald Edwards Medal	R Ranasinghe
John Parker Medal	E Hickey
Society Thoracic Medal	A Alzetani
Best CT Forum Presentation	L McKee

The winners will be presented with their medals at the annual dinner.

SCTS 2007 Awards

Ronald Edwards Medal	best scientific oral presentation
John Parker Medal	best interactive presentation
Society Thoracic Medal	best scientific thoracic presentation

The winners will be announced at the annual dinner.

SCTS 2006 Scholarships

St Jude Scholarship	J Chikwe
Society Thoracic Scholarship	J Edwards
The Marian & Christina Ionescu Travelling Scholarship	M Jahangiri

SCTS 2007 Scholarships

Society Cardiac Scholarship
Society Thoracic Scholarship
The Marian & Christina Ionescu Travelling Scholarship

The winners of the 2007 scholarships will be announced at the annual dinner.

COMMITTEES

Executive Committee 2006–2007

Prof Sir Bruce Keogh	*President*	2006–2008
Mr Leslie Hamilton	*President elect*	2006–2008
Mr James Roxburgh	*Honorary Secretary*	2004–2009
Mr Babulal Sethia	*Honorary Treasurer*	2004–2009
Mr Graham Cooper	*Meeting Secretary*	2002–2007
Mr Simon Kendall	*Deputy Meeting Secretary*	2005–2007
Mr Chris Munsch	*Chairman of the SAC*	2005–2008
Mr Leslie Hamilton	*Chairman of Inter-Collegiate Board*	2004–2007
Mr Steven Hunter	*Cardiothoracic Dean*	2004–2009
Mr Sunil Ohri	*Publication Secretary*	2004 -
Mr Jonathan Hyde	*Cardiothoracic Tutor*	2004–2007
Mr Malcolm Dalrymple-Hay	*Young Consultant's Representative*	2005–2008
Mr Freddie Wood/		
Ms Eilis McGovern	*Representing the Republic of Ireland*	2003–
Ms Farah Bhatti	*Trainee Representative*	2006–2009
Mrs Tara Bartley	*Nursing Representative*	2006-2011
Mr Richard Page/		
Mr Jim McGuigan	*Thoracic Audit*	2003–
Jim McGuigan	*Thoracic Representative*	2006-
Mr Graham Venn	*Elected member*	2004–2007
Mr Steven Livesey	*Elected member*	2004–2007
Prof David Taggart	*Elected member*	2005–2008
Mr Samer Nashef	*Elected member*	2005–2008
Mr Tim Graham	*Elected member*	2006–2009
Mr Ben Bridgewater	*Elected member*	2006–2009

Working Group Chairs

Mr Patrick Magee	*Revalidation*	2006-continuing
Mr Richard Page	*Thoracic Surgical audit*	2004–continuing
Mr David Richens	*NHS Ombudsman/SCTS (Cardiothoracic consent)*	2004–continuing
Mr Graham Cooper	*Review of the Constitution and working of the Executive*	2004–continuing
Mr Steven Livesey	*NCEPOD study (1st time CABG mortality)*	2004–continuing
Mr Mark Jones	*Quality Accreditation Programme*	2002–continuing
Mr James Roxburgh	*Consultant Contracts*	2001–continuing
Mr Graham Venn	*Bloodborne Infection*	2004– 2006

Programme Committee 2006 Meeting

		Lead Reviewers	
Mr Graham Cooper	*Meeting Secretary*	Mr Steve Clark	Transplantation
		Mr Malcolm Dalrymple-Hay	Adult Cardiac
		Mr John Duffy	Thoracic
		Mr Brian Fabri	Adult Cardiac
		Mr Adrian Marchbank	Experimental & Miscellaneous
		Mr Andrew Parry	Congenital
		Mrs Tara Bartley	CT Forum

Abstract Reviewers 2007 Meeting

Adult Cardiac	Mr Brian Fabri (lead)	*Thoracic*	Mr John Duffy (lead)
	Mr Malcolm Dalrymple-Hay (lead)		Mr Sion Barnard
	Mr Clifford Barlow		Mr Jim McGuigan
	Mr Geoff Berg		Mr Rajesh Shah
	Mr Ben Bridgewater		Mr David Waller
	Mr Andy Goodwin	*Transplantation*	Mr Steve Clark (lead)
	Mr David Jenkins		Mr John Dark
	Mr Unnikrishnan Nair		Mr Steven Tsui
	Prof David Taggart		Mr Nizar Yonan
	Mr Ian Wilson		Mr Ian Wilson
Congenital	Mr Andrew Parry (lead)	*Forum*	Mrs Tara Bartley (lead)
	Mr David Barron		Ms Georgina Aldous
	Mr Lars Nolke		Mr Tony Jessop
	Mr Mark Redmond		Ms Linda McKee
	Mr Kevin Watterson		Ms Helen Munday
Experimental	Mr Adrian Marchbank (lead)		Mr David Purdue
	Dr David Chambers		
	Mr Jonathan Hyde		
	Mr Clinton Lloyd		
	Mr Alex Shipolini		

Specialist Advisory Committee in Cardiothoracic Surgery 2006–2007 (A Sub-committee of the Joint Committee for Higher Surgical Training)

Mr Chris Munsch	*(Chairman) Royal College of Surgeons*	2005–2008
Mr Steven Hunter	*Cardiothoracic Dean*	2004–2009
Mr Leslie Hamilton	*Chairman of the Intercollegiate Board*	2004–2007
Mr James Roxburgh	*Secretary Society for Cardiothoracic Surgery*	2004–2009
Mr Jim McGuigan	*Joint Royal College Representative*	2003–2008
Mr Steve Livesey	*Society for Cardiothoracic Surgery*	2004–2009
Mr Frank Wells	*Society for Cardiothoracic Surgery*	2001–2006
Mr Tim Graham	*Vice Chairman and representative for Royal College of Surgeons of Edinburgh*	2001–2006
Mr Vincent Young	*Royal College of Surgeons in Ireland*	2004–2009
Mr Pala Rajesh	*Joint Colleges Representative*	2006–2011
Dr David Sowden	*Lead Dean for Cardiothoracic Surgery*	For term of office
Ms Farah Bhatti	*Trainee Representative*	2006–2009

Intercollegiate Board in Cardiothoracic Surgery 2006–2007

Mr Leslie Hamilton	*Chairman (2005–2007) and Representative of the Royal College of Surgeons of England*	2005–2007
Mr James Roxburgh	*Representative of the Society for Cardiothoracic Surgery*	2003–2008
Mr Chris Munsch	*Chairman SAC in Cardiothoracic Surgery*	2005–2008
Mr Tom Aherne	*Representative of the Royal College of Surgeons in Ireland*	2003–2008
Mr Kenny MacArthur	*Honorary Secretary (2003–2006) Representative of the Royal College of Physicians and Surgeons of Glasgow*	2001–2006
Mr Tim Graham	*Representative of the Royal College of Surgeons of Edinburgh*	2003–2008
Mr Steven Hunter	*Cardiothoracic Dean Representative of the Society for Cardiothoracic Surgery*	2004–2009

MEETING HISTORY

List of Presidents of the Society since 1934

1934	Mr H Morrison Davies	1977	Mr H R S Harley
1936	Mr J R H Roberts	1978	Mr R Abbey Smith
1938	Mr A Tudor Edwards	1979	Mr R P Moore
1945	Mr J B Hunter	1980	Mr J R Belcher
1947	Mr W M Anderson	1981	Mr M Bates
1948	Mr R B Purse	1982	Mr J M Hill
1950	Mr A Graham Bryce	1983	Mr J F Dark
1952	Sir Clement Price Thomas	1984	Mr D N Ross
1954	Mr H Reid	1985	Mr M Paneth
1956	Mr B Dick	1986	Mr M V Baimbridge
1958	Sir Russell Brock	1987	Sir Keith Ross
1959	Mr G A Mason	1988	Professor W H Bain
1961	Sir Thomas Holmes Sellors	1989	Mr W G Williams
1963	Mr R F J Henry	1991	Professor D I Hamilton
1964	Mr N R Barrett	1992	Professor G H Smith
1966	Mr V C Thompson	1994	Mr B Ross
1968	Mr P R Allison	1995	Mr J Bailey
1969	Mr A L d'Abreu	1996	Professor H Matthews
1970	Mr A Logan	1997	Professor D Wheatley
1971	Mr O S Tubbs	1999	Mr J Dussek
1972	Mr F R Edwards	2001	Mr J Monro
1973	Mr J L Collis	2003	Mr C Hilton
1974	Mr R H R Belsey	2005	Mr P Magee
1975	Mr R S Barclay	2006	Professor Sir B Keogh
1976	Mr W P Cleland		

SCTS Annual Meeting's 10-Year History

1997	*Royal College of Surgeons*	Dublin
1998	*Edinburgh International Conference Centre*	Edinburgh
1999	*East Midlands Conference Centre*	Nottingham
2000	*Business Design Centre*	London
2001	*East Midlands Conference Centre*	Nottingham
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

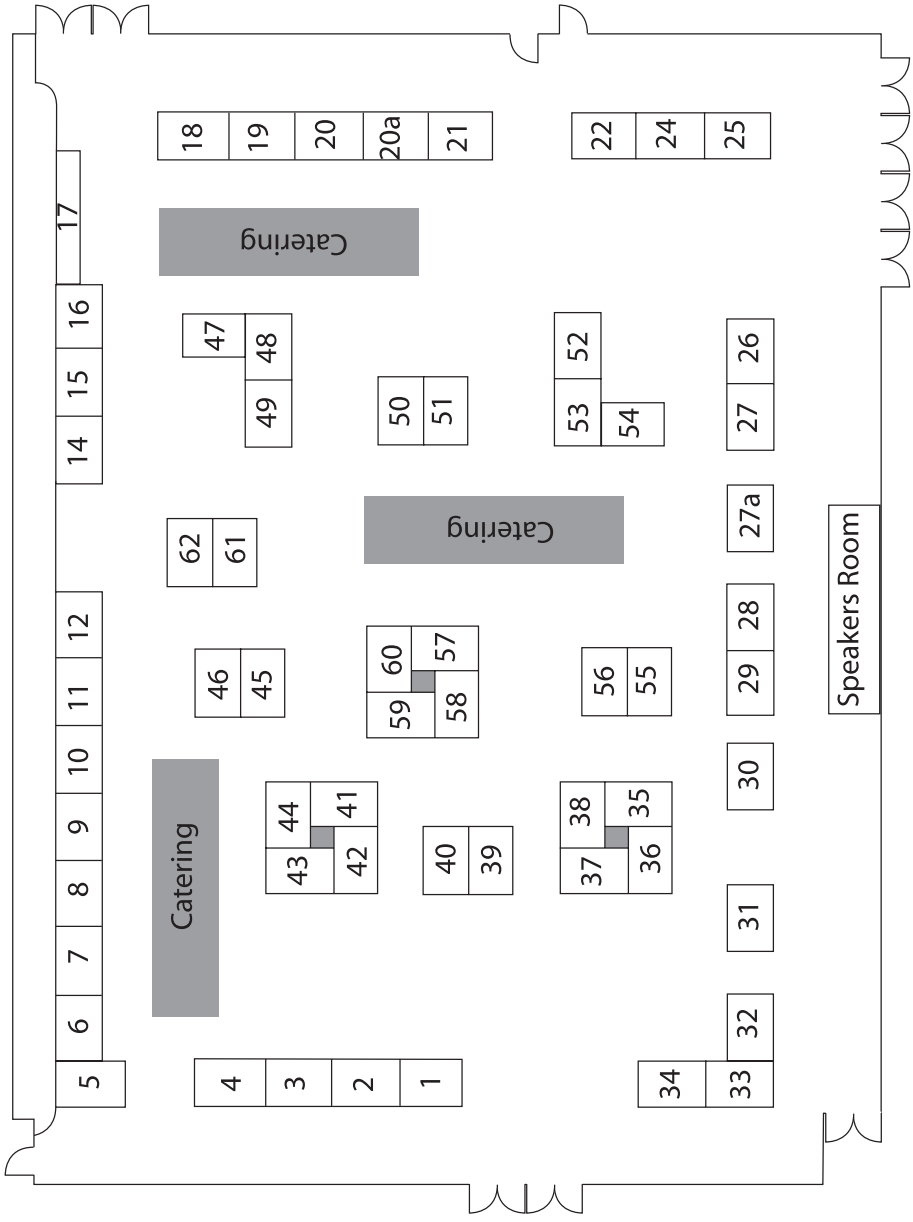
SOCIETY FOR CARDIOTHORACIC SURGERY

IN GREAT BRITAIN AND IRELAND

2007 ANNUAL MEETING

EXHIBITION CATALOGUE

Exhibition Plan



CATALOGUE OF EXHIBITORS

Stand	Company Name	Stand	Company Name
56	Atrium Medical Corporation		
20, 20A	ATS	30	Kimberly Clark
45, 46	Baxter Healthcare Ltd	59	Koehler Medical Ltd
15	Bayer	38	Lemonchase
42	Boston Scientific*	1	Life Stream Healthcare Ltd
4	BVM	47, 48, 49	Medtronic
18, 19	CalMed UK Ltd	37	Nuance
2	CALS	9	Olympus KeyMed
22	Cardio Solutions (UK) Ltd	61	Omega Critical care Ltd
55	Cardiologic Ltd	35	Pierson Surgical Ltd
27a	Cardiothoracic Services Galway	50, 51	Pulse Surgical Ltd
28, 29	Chalice Medical Ltd	27	Scanlan International Inc
43	Clark Optical Ltd	5, 6, 7	Sorin Group UK Ltd
3	CryoLife Europa Ltd	52, 53, 54	St Jude Medical Ltd
14	CTSNet/ EACTS	10	Synthes
44	Datascope Medical Co Ltd	40	Teasdale Surgical Ltd
21	Dendrite Clinical Systems Ltd	25	Tomcat Clinical Systems
32, 33, 34	Edwards Lifesciences Ltd	11, 12	Tyco Healthcare
41	Ethicon Ltd	26	UK Medical Ltd
31	Fehling Instruments	57, 58	Vascutek Ltd
60	Haemonetics	24	Wexler Surgical Supplies
8	Innocoll Pharmaceuticals	17	Wisepress Online Bookshop Ltd
39	York Medical Technologies Ltd	* distributed by CalMed UK Ltd	

ASTRA TECH LTD — Stand 16

Brunel Way, Stonehouse, Gloucestershire GL10 3SX, UK
Tel: +44 (0)1453 791763 Fax: +44 (0)1453 791001
Email: info.uk@astratech.com Website: www.astratechuk.com

Contact: Simon Talbot, Product Manager – Surgery

Astra Tech began its commitment to blood management over 25 years ago and we believe that success in this field should be characterised by strong customer partnerships and the ability to support marketing claims by using solid clinical documentation. Astra Tech is a company in the Astra Zeneca Group and our close connection with the pharmaceutical industry has a significant impact on the way we develop and market our products.

In our day-to-day work we are guided by three important core values: simplicity, reliability and superlative customer support. This has made the Astra Tech blood management products some of the fastest-growing systems in the world.

Please come and visit us on stand number 16, where our sales support team will be glad to discuss our blood management products with you.

ATRIUM MEDICAL UNITED KINGDOM — Stand 56

Peter House, Oxford Street, Manchester M1 5AN, UK
Tel: +44 (161) 209 3675 Fax: +44 (161) 209 3676
Email: atriumuk@atriummed.com Website: www.atriummed.com

Atrium Medical is happy to celebrate its second year in the United Kingdom with a direct sales organisation, and would like to thank you for making it happen!

Visit us at stand 56 in Manchester, to (re)discover our full range of innovative chest drainage solutions, including our compact, wearable and waterless operation systems such as the Express Mini™ 500 and the Pneumostat™ Chest Drain Valve for rapid patient ambulation.

We will also present to you the new Pleuraguide™ **Chest Tube Insertion Kit, easy and economical** with virtually everything needed for bedside chest tube insertion.

Atrium is also dedicated to bring you the **best education resources and support** with our continuously updated website **www.atriummed.com** , nursing education videos, handbooks, and quarterly Clinical Updates newsletters.

We look forward to meeting you again!

ATS — Stands 20, 20A

US Headquarters
ATS Medical, Inc, 3905 Annapolis Lane, Suite 105, Minneapolis, MN 55447
USA
Tel: + 1/763-553-7736 Fax: + 1/763-553-1492
Email: atriumuk@atriummed.com Website: www.atsmedical.com

Contact: Fiona K. Fraser, Country Manager, ATS Medical; Tel: 07740 371698

ATS Medical, Inc. manufactures and markets products and services focused on cardiac surgery. The ATS Open Pivot® Heart Valves, which utilize a unique pivot design resulting in exceptional performance and low risk profile, have been implanted in patients worldwide for more than 10 years. At this meeting we will introduce the ATS Open Pivot AP360™ valve which offers the same clinical benefits of the open pivot design with a flanged cuff of double-velour polyester for exceptional flexibility, needle penetration and conformability. ATS is proud to announce the addition of the ATS 3f® tissue valve products which are intended to improve on the performance of existing heart valves by mimicking natural valves. Our focus on serving the cardiac surgery community is further strengthened by offerings that include ATS Simulus™ annuloplasty products for heart valve repair, SurgiFrost® and FrostByte™ products for surgical cryoablation of cardiac arrhythmias, the Enclose II anastomosis assist device, and the development of PARSUS blood filtration technology. The ATS Medical web site is http://www.atsmedical.com.

BAXTER HEALTHCARE LTD — Stands 45, 46

BioScience, Wallingford Road, Compton, Newbury, Berkshire, RG20 7QW UK
Tel: +44 (0)1635 206074 Fax: +44 (0)1635 206126

Surecall Baxter Medical Information Tel no. 01635 206345

Baxter Healthcare's mission is to apply our expertise in medical devices, pharmaceuticals and biotechnology to make a meaningful difference in patients' lives.

Baxter BioSurgery's mission is to improve surgical practice by the development and use of novel biomaterials for hard and soft tissue repair.

Baxter BioSurgery is showing a number of products at this meeting – aimed at helping the surgeon to achieve haemostasis, support and seal tissue.

BAYER PLC — Stand 15

Strawberry Hill, Newbury, Berkshire RG14 1JA
UK
Tel: +44 (0)1635 563000 Fax: +44 (0)1635 563662
Email: medical.science@bayer.co.uk Website: www.bayer.co.uk

Bayer HealthCare AG is one of the world's leading, innovative companies in the healthcare and medical products industry. The company combines the global activities of the Consumer Care, Animal Health, Diabetes Care, Diagnostics and Pharmaceuticals divisions. Bayer Pharmaceuticals consists of Hematology/Cardiology; Oncology and Primary Care.

Bayer HealthCare's aim is to discover and manufacture innovative products that will improve health worldwide. Bayer continues investing into product development for **Hematology and Cardiology** and fulfilling its commitment of enhancing well-being and quality of life.

Visit our stand to get more information about our investment into cardiac surgery.

BOSTON SCIENTIFIC distributed by CALMED UK LTD — Stands 42

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BVM Medical is a Cardiovascular Medical Device Distrbution company established in 1989.
On show we have 'Relay' Stent Graft for Thoracic Aortic Aneurysms / Dissection.
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We look forward to seeing you at our stand.

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Tel: +44 (0)1698 845511 Fax: +44 (0)1698 845456
Email: info@calmed.co.uk Website: www.calmed.co.uk

Contact: Gordon R Wright, Managing Director or Rachel Wright, Sales Manager

Caledonian Medical Limited has now been established for 12 years. We manufacture custom procedure trays at our facility in Scotland. We are able to do this for all surgical disciplines to hospitals throughout the UK.

We also distribute a range of cutting-edge technology products for Cardiovascular Surgery. These include:

ATS Medical – the only open pivot bileaflet heart valve, Guidant – who manufacture a range of products for OPCAB, 3F – a new technology equine pericardial stentless valve, IntraVasc – the PulseCath Left Heart Assist Pump, SyntheMed – supply the Repel CV anti-adhesion barrier, Estech – minimal access products including OPCAB, AF ablation and valve surgery, Labcor – a Stented Porcine Tissue Valve, Calmed Labs – a range of Perfusion Cannula, Eurosets – Drainage and reinfusion systems and Perfusion Sets, MicroOptical – a head up display system.

CALS — Stand 2

Tel: 07801548122
Email: joeldunning@doctors.org.uk Website: www.csu-als.com

Have you ever felt out of your depth when a patient post-cardiac surgery arrests or is critically ill? Or do you trust your staff to treat these patients competently as you would have treated them?
This highly innovative 3-day course teaches all aspects of the treatment of critically ill patients post-cardiothoracic surgery. The course features lectures and a manual but the emphasis is on practical training. A mock-up ICU with mannikins and all the necessary theatre equipment is used for cardiac-arrest training, and for the critically ill surgical patient, mannikins with laptop-simulated monitors and one-to-one training is used. We also feature hands-on IABP training, tracheostomy emergencies, CXR, ECG and blood gas interpretation.

This course is intended for both doctors and nursing staff interested or likely to be involved in the care of the critically ill patient. CICU and ward nurses, surgical assistants, nurse practitioners, SHOs and junior registrars have all benefited from attendance on our previous 9 courses over the last 3 years. Our course has been described in the November 2005 BMJ, and in the Annals of Thoracic Surgery. We have 3 courses this year, all being held in the heart of the Lake District. Course dates: 26th–28th April, 19th–21st July, 15th–17th November.

CARDIO SOLUTIONS UK LTD — Stand 22

Customer Services:
Tel: 01423 875 787 Fax: 01423 501 112
Email: customer.services@cardiosolutions.co.uk Website: www.cardiosolutions.co.uk

Contacts: *Mark Bailham: 07725 365 552; mark.bailham@cardiosolutions.co.uk*
Wayne Wright: 07725 365 550; wayne.wright@cardiosolutions.co.uk
Mark Woolley: 07725 365 551; mark.woolley@cardiosolutions.co.uk

Cardio Solutions Ltd is a UK based company dedicated to the supply and sales management of Cardiovascular Equipment to the UK health market. It is our business to build and nurture relationships with key figures within the medical industry to ensure the highest quality of service in the delivery of Cardiovascular 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 and Mitral Repair Rings and the Epicor High Intensity Focused Ultrasound (HIFU) ablation device, Medical Concepts Temporary Pacing Wires, Jotec Vascular Grafts and TAA Stentgraft systems, FLEXIGRIP- Nitinol Sternal Closure Clips from Praesidia and VirtuoSaph an Endovascular Vein Harvesting system from Terumo.

CARDIOLOGIC LTD — Stand 55

Hillside House, Cowesby, Thirsk, North Yorkshire YO7 2JL UK
Tel: +44 (0)1845537870 Fax: +44 (0)1845537872
Website: www.cardiologic.co.uk

Contact: Andrew Coane, Sales and Marketing Director: Mobile 07870 255 758; andrewcoane@cardiologic.co.uk

Cardiologic Ltd is proud to present the latest products developed by Atricure for Atrial Fibrillation surgery. These include the Transpolar pen and new multiple application box for Pacing, Sensing, Stimulating and Ablating the atrium and around the pulmonary veins to map the ganglionic plexi and confirm PV isolation. The latest data and updated techniques will be available for both open and closed chest approaches.
The Acorn Corecap device and the most recent published data is presented on the stand. New data shows that this is a very effective and safe answer for particular heart failure patients when there is no other option.
To continue the heart failure theme The TRISAVR device from Chase Medical is displayed. This shaping device provides the surgeon with predictable, reproducable results when confronted with a difficult ventricular restoration procedure for ventricular aneurysms.
With the growing use of biventricular pacing, the surgical implantation of LV pacing leads is on the increase. The Enpath Myopore bipolar screw-in lead and minimally invasive tool the Fastac are becoming very popular in the UK and are presented on the stand.
New for this year is the Novadaq Spy intra-operative imaging system. This system provides the Cardiac Surgeon with fabulous pictures in the theatre for real-time assessment of graft patency and allows recordable and printable images for documentation purposes.

CARDIOTHORACIC SERVICES GALWAY — Stand 27a

CHALICE MEDICAL LTD — Stands 28, 28

Coach Crescent, Shireoaks, Worksop, Nottinghamshire S81 8AD UK
Tel: +44 (0)1909 470777 Fax: +44 (0)1909 470888
Email: enquiries@chalicemedical.com Website: www.chalicemedical.com

Chalice Medical Ltd was established in 1998 to import high-quality medical products from suppliers in Europe and the USA specifically for the Cardiac Surgery and Perfusion market within the UK and Ireland.

From our head office in Nottinghamshire, Chalice manufacture customised extra-corporeal tubing packs, cannula and cardiotomy reservoirs within its two state-of-the-art cleanrooms. The sales and marketing suites, climate-conditioned warehousing and distribution centre are also located here.

Our products range includes:

Ventricular Assist Devices
- Levitronix® CentriMag® short-term Ventricular Assist device
- Medos® VAD and HD8® new portable driving console for medium-term assist
- Syncardia® Total Artificial Heart

Delacroix Chevalier® Surgical Instruments
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- Instruments for minimally invasive surgery
- Needleholders, Micro-instruments, Resano forceps
- Titanium instruments

Medos® and Gish® Oxygenators and Extracorporeal Tubing Packs
- Minimised Bypass and conventional systems
- Adult and paediatric ranges
- Conventional and Long-Term ECMO ranges
- Cardioplegia delivery systems

Cannulae
- Surge Medical® (formerly Chase Medical Products)
- Medos®
- Andocor®
- Origen®

CLARK OPTICAL LTD — Stand 43

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Tel: +44 (0)141 571 0591

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Our choice of loupes is vast from Clip-On loupes for spectacle wearers to the world's first surgical loupe hybrid that has multiple built in working distances and interchangeable magnifications. They are all on show and available for you to try.

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This gives you the opportunity to have the loupes that are best for you and confident that the advice you are given is from a qualified professional.

CRYOLIFE EUROPA LTD — Stand 3

CryoLife Europa, Ltd., Bramley House, The Guildway, Old Portsmouth Road
Guildford, Surrey GU3 1LR
Tel: 01483 441030 Fax: 01483 452860
Email: europa@cryolife.com

CryoLife Europa, Ltd. will be demonstrating BioGlue® Surgical Adhesive. BioGlue can be used as a sealant, adhesive and for tissue reinforcement. Clinically proven in over 300,000 procedures worldwide, BioGlue is now available in a fully disposable syringe system in 10 mL, 5 mL and 2 mL volumes.

The smaller profile of the syringe improves site access and visualisation and the all-inclusive packaging saves time and storage space. BioGlue Surgical Adhesive is CE marked for cardiac, vascular, pulmonary, dura mater repair and general surgery.

CryoLife Europa Ltd will also be demonstrating the CryoLife-O'Brien® Porcine Bioprosthesis. The CryoLife-O'Brien Bioprosthesis is a stentless porcine aortic valve with proven durability and performance out to 10 years. The supra-annular implant position and single-suture line implant technique offers many benefits to both surgeons and patients.

CTSNet — Stand 14

Website: www.ctsnet.org/

Contact: Carol L. Blasberg: blasbergc@wustl.edu

CTSNet is the premier electronic community and portal of information for cardiothoracic surgery, providing the most comprehensive, most heavily trafficked and most reliable online source of information about cardiothoracic surgery available worldwide. CTSNet's many resources are the full text and graphics of all articles for the major journals in the field. Cardiothoracic surgery is unique among medical specialties in having a single, collaborative web resource created by and including the major professional associations around the world. This backing by the recognised professional societies throughout the world gives CTSNet a level of credibility and an authoritative voice unmatched by any other online source.

DATASCOPE — Stand 44

Datascope UK are pleased to announce the launch of our range of Thoracic Grafts. Features include:

- Exclusive weave design which produces woven grafts that handle and suture like a knitted graft
- Outstanding strength and long-term durability
- A complete range of sizes, including speciality grafts for aortic arch and thoracic aorta repair and replacement
- Proven clinical safety and efficacy

Datascope produce the linear 7.5Fr IAB Catheter. Features include a Durathane Membrane for significantly increased abrasion resistance, no step down from membrane to catheter, significantly reduced force of insertion compared to previous IAB catheters and better tracking and handling, particularly in tortuous vessels. The true 7.5Fr gives the Linear IAB a 12% reduction in in-dwelling cross-sectional area compared with previous 8Fr products. Datascope also produce the fully automated CS100 Intra-Aortic Balloon Pump.

DENDRITE CLINICAL SYSTEMS LTD — Stand 21

59A Bell Street, Henley-on-Thames, Oxfordshire RG4 9QT
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

With installations in 40 UK cardiothoracic centres, Dendrite is the leading supplier of database and analysis software for both cardiac and thoracic surgery. Visit our exhibition stand to see Dendrite's web-based database system and meet the team to see the latest developments and discuss your requirements.

EDWARDS LIFESCIENCES — Stands 32, 33, 34

2 Toomers Wharf, Canal Walk, Newbury, Berkshire RG14 1DY
Tel: 0870 606 2040 Fax: 0870 606 2050
Website: www.edwards.com/europe

Edwards Lifesciences is a global leader in products and technologies to treat advanced cardiovascular disease. Edwards continues to lead in the promotion of education for valve repair techniques and to innovate in valve replacement solutions. Visit our stand to learn more about the new Carpentier–Edwards Perimount **Magna™** valve with **Thermafix™**, now available for the Mitral position.

ETHICON LIMITED — Stand 41

JOHNSON & JOHNSON MEDICAL LIMITED
PO Box 1988, Simpson Parkway, Kirkton Campus, Livingston EH54 0AB
Customer Services: Tel: 0800 0327 326 Fax: 01344 864122
Websites: www.ethiconproducts.co.uk and www.jnjgateway.com

Beating cardiovascular disease is a declared goal of JOHNSON & JOHNSON, the world's most comprehensive and broadly based manufacturer of healthcare products. The JOHNSON & JOHNSON companies represented on the stand are: CardioVations [minimally invasive cardiovascular products and technologies for valve and vessel management] and ETHICON.

ETHICON is a division of JOHNSON & JOHNSON MEDICAL LIMITED is the worldwide leader in suture products and suture technology and is one of the most recognisable and well-respected brand names in the hospital environment. The division has a long history of innovation in providing products – including sutures, topical adhesives, surgical meshes and wound drains – that improve lives by advancing the standard of care in tissue repair.

EUROPEAN ASSOCIATION FOR CARDIO-THORACIC SURGERY (EACTS) — Stand 14

EACTS Executive Secretariat, 3 Park Street, Windsor, Berkshire SL4 1LU, UK
Tel: +44 1753 832166 Fax: +44 1753 620407
Email: info@eacts.co.uk Website: www.eacts.org

EACTS was founded as a European organisation. However, its membership is now spread all over the world in all continents representing some 80 countries. Since its foundation in 1986 more than 2000 members have been admitted.
The Annual Meeting of EACTS has become the largest event in the world in the specialty. Mark your calendar with the dates of the 21st EACTS Annual Meeting which will take place 15-19 September 2007 in Geneva, Switzerland.

Visit stand No. 14 for information on membership, European School for Cardio-Thoracic Surgery in Bergamo, European Journal of Cardio-Thoracic Surgery (EJCTS), Interactive Cardiovascular and Thoracic Surgery (ICVTS), Multimedia Manual of Cardiothoracic Surgery and all activities of EACTS. Membership includes subscriptions to EJCTS and ICVTS as well as free access to the Annual Meeting.

FEHLING INSTRUMENTS — Stand 31

Hanauer Landstr. 7A, 63791 Karlstein, Germany
Tel: +49 61 88 - 95 74 0 Fax: +49 61 88 - 95 74 45
Email: info@fehling-instruments.de Website: www.fehling-instruments.de

Fehling Instruments is a traditional family-owned enterprise in the field of surgical instruments. Continuously striving to improve function and economy of products has led to outstanding innovations in material and design. The introduction of CERAMO® in 1996 was a major step towards perfection of surgical instruments which are subject to abrasion, i.e. needle holders, forceps, scissors, punches, etc. New concepts in mechanics and design have made more favourable improvements to retractors, aortic punches, dilators, and many more cardiovascular instruments.

HAEMONETICS — Stand 60

INNOCOLL PHARMACEUTICALS — Stand 8

KARL STORZ — Stand 36

392 Edinburgh Avenue, Slough, Berkshire SL1 4UF
Tel: 01753 503 500 Fax: 01753 578 124
E-mail: customerservice@karlstorz.com

Contact: Steve Anderson

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 cardiothoracic instruments for endoscopic procedures. These include the following in the cardiothoracic product range:-

- Multifunctional retractor for thoracic and heart surgery
- Endoscopic Saphenous Vein Harvesting system
- Video-Mediastinoscope

So please visit the Karl Storz stand 36, and we shall be pleased to discuss all your endoscopic requirements.

KIMBERLY-CLARK — Stand 30

KIMBERLY-CLARK HEALTHCARE INTRODUCES NEW PATIENT WARMING SYSTEM

Focused on providing innovative, clinical solutions to protect patients and healthcare workers, Kimberly-Clark has recently launched its Patient Warming System. Designed to improve patient outcomes and reduce healthcare acquired infections (HAI) across a wide range of surgical procedures, the new system allows anaesthetists and surgeons to manage precisely patient temperatures during complex operations. It is proven to be the most efficient, non-invasive method of temperature control available[1].

For the first time, surgeons only need to cover less than 20% of the patient's body through the direct application of a novel warming pad. The Patient Warming System circulates water at a precise temperature through hygienic, disposable hydrogel pads placed directly on the patient to deliver even, all-over body warming.

Kimberly-Clark's system is suited to a wider range of applications than existing solutions, particularly long operations of over three hours, including cardiothoracic, trauma and intensive care procedures.

The Patient Warming System prevents hypothermia[2] which reduces bleeding and the need for blood transfusion, intubation and recovery times. The patient's stay in hospital is minimised and there is also a lower chance of post-operative infection.

[1] Brauer A, English MJ, Steinmetz N, Lorenz N, Perl T, Braun U, Weyland W. Comparison of forced-air warming systems with upper body blankets using a copper mannequin of the human body. Acta Anaesthesiol Scand 2002;46:965–972

[2] Steven R Insler, DO et al. Perioperative maintenance of normothermia reduces the incidence of morbid cardiac events. JAMA 1997;277(14):1127–1134

KOEHLER MEDICAL LTD — Stand 59

Astley Lane, Swillington, Leeds LS26 8XT
Tel: 0113 287 1122 Fax: 0113 287 3087
Email: www.koehler-medical.com

Contact: John Mc Kenna

Koehler Medical Ltd – celebrating 25 years of valve manufacture in Leeds.

Koehler Medical is the only company to manufacture heart valves in the UK. Our **Aspire Porcine stented valve** is sourced locally, which allows the company to offer a unique method of manufacture – Fresh Mounting. The valve tissue is still elastic and fresh and so can be mounted exactly as it was aligned in the donor, thus providing durability and strength for purpose. The results of this manufacturing method are confirmed in the recent 10-year paper on the Aspire Valve published in January 2005.

The **Elan stentless valve** with its 'tissue only' construction again highlights an innovative and precise reproduction of the host haemodynamics and durability. The elimination of artificial cloth and buttressing allows an easy, flexible valve for working in the tight native root. The stentless Elan range is available as a sub-coronary scalloped valve, as a small root and as a full root with the anterior cusp of the mitral valve attached for total root replacement.

The **MRS mitral valve** repair system continues to be the only such system manufactured in the UK.

The **Ultracor Tilting disc mechanical valve** continues its unbroken record of durability since its introduction.

LEMONCHASE — Stand 38

Lemonchase Ltd, The Brewery, Bells Yew Green, Tunbridge Wells, Kent TN3 9BD
Tel: +44 (0) 1892 752305 E mail: info@lemonchase.com

Lemonchase are the exclusive UK distributors of **Designs for Vision** loupes and lights. 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 your 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.

LIFE STREAM HEALTHCARE LTD — Stand 1

The Studio, Silverwood Farm, Landford Wood, Salisbury, Wiltshire SP5 2ES
Tel: 08700 275 470 Fax: 08700 275 471
Email: johncooper@life-stream.co.uk Website: www.life-stream.co.uk

Contact: John Cooper

Life Stream Healthcare Limited, is delighted to be exhibiting at the annual scientific meeting of the Society for Cardiothoracic Surgery in Great Britain and Ireland. We have been working very closely with East Sussex hospitals on the development of a vital video communication link that enables Cardiology consultants to communicate instantly with remote surgeons in emergency situations. Our launch of this product takes place at this Society event.
The product itself utilises video streaming technology to achieve high quality transmission connecting both the video images of the consultant and surgeon as well as the vital Fluoro video feed directly from the hospital equipment. Touch screen displays at each end enable ease of use and instant communication.

The solution has been designed with a dual purpose. As well as providing the emergency link it also provides the ability to review vital patient data remotely by video. This eliminates the need for surgeons and consultants to travel to a single meeting point. The system enables both locations to control the data stream for accurate reviews.
We invite you to view this new innovation at stand 1.

MEDTRONIC LTD — Stands 47, 48, 49

Cardiac Surgery Division, Sherbourne House, Croxley Business Park, Watford WD18 8WW
Tel: +44 (0) 1923 212213 Fax: +44 (0) 1923 241004
Website: www.medtronic.co.uk and www.heartvalverepair.net

Contact: Mrs Bettina Fitt

Medtronic offer a comprehensive range of tissue and mechanical valves, repair products, DLP cannulae, OPCAB products and Atrial Fibrillation pens, bi-polar clamps and generators. We have over 50 000 ablation cases safely performed worldwide. We offer the latest tissue technology in the 3rd generation stented Mosaic and the unstented Freestyle valves as well as unparalled 20-year data on our second generation Hancock II stented tissue valves. In addition, we have built on the outstanding results of the MedHall valve to bring you the latest technology in a bileaflet valve, the Advantage, available in both standard and supra-annular, aortic and mitral. Medtronic has recently launched two new repair products this year and would be happy to show these to you on our stand.

Please visit our stand where the team will be happy to show you all of the above along with some other exciting new products.

NUANCE — Stand 37

OLYMPUS KEYMED — Stand 9

Stock Road, Southend-on-Sea, Essex SS2 5QH
Tel: 01702 616333
Email: info@keymed.co.uk Website: www.keymed.co.uk

Olympus KeyMed is a wholly owned subsidiary of Olympus Corporation, which enjoys an unparalleled reputation among the world's leading companies in the video-optic and minimally invasive therapeutics arena.

Olympus pioneered high-definition (HD) technology for surgical imaging with the Olympus high-definition EXERA II Universal Platform for surgery. Operating at the 1080i high-definition standard, the Exera II system dramatically enhances image quality by increasing the number of pixels used to capture and recreate images electronically. 1080i image reproduction is extremely sharp, highly detailed and exhibits low pixilation. The EXERA II system offers the new standards of resolution, colour rendition and contrast, even when operating inside the thoracic cavity.

HD images are captured through a choice of autoclavable high-definition camera heads and telescopes or the unique high-definition Olympus HD EndoEYE, an autoclavable, focus-free integrated HDTV video laparoscope.

In addition Olympus KeyMed also offers a large range of surgical devices for thoracic surgery including the HiQ+ range of monopolar and bipolar hand instruments.

Come and see the reality of high-definition imaging – visit the Olympus Olympus KeyMed stand for a demonstration.

OMEGA CRITICAL CARE LTD — Stand 61

PIERSON SURGICAL LTD — Stand 35

North Bradley House, North Bradley, Trowbridge, Wiltshire BA14 0TA UK
Tel: +44 (0)7785 295594 Fax: +44 (0)7092 315510
Email: annie@piersonsurgical.com Website: www.piersonsurgical.com

Contacts: Annie Pierson

Pierson Surgical Ltd is a specialist surgical products distributor with a primary focus on Cardiac and Vascular products. Current products include:

- Péters Sutures - a wide spectrum of high quality sutures for all aspects of surgery. This includes:
  - Cardionyl and Cardioflon ranges for Mitral Valve surgery
  - Corolene with its very low memory and high strength for Coronary surgery.
  - Premio which offers excellent long term stability and has the option of pre-attached pledgets for buttressing in both paediatric and adult surgery
  - Cardioflon with Teflon impregnation for Cardiac Valve repair, also available with pre-attached pledgets
  - Stainless Steel Sternal closing Wires
- Perouse – Woven Vascular Prostheses for Cardiac Surgery including one, three and four branch prostheses
- Landanger and Delacroix-Chevalier Surgical Instruments – France's largest manufacturer producing an extensive range of surgical instruments with a specialisation in CardioThoracic and Vascular instruments.
- Assut Bone Wax – virgin bees wax to control micro-haemorrhages of bone surfaces
- Keeler Magnification Loupes
- Tubing Clamps for Perfusionists

I look forward to seeing you on the stand.

PULSE SURGICAL LTD — Stands 50, 51

32A Station Road, Chinnor, Oxon OX39 4PZ UK
Tel: +44 (0)1844 352220 Fax: +44 (0)1844 354322
Email: steve@pulsesurgical.co.uk Website: www.pulsesurgical.com

Contact: Mr Steve Chaplin

Pulse continues to be one of the most focused cardiac companies in the UK. As independent distributors, we can offer a unique mix of complimentary products. These include the superb Scanlan Instrument product line, associated with first-class Surgical Acuity loupes, the On-X heart valve range, Medi-Stim's flow meter with vessel location option, PeriStrips for staple-line buttressing and Periguard pericardial patches. We also handle the unique Vivostat autologous fibrin system, Flothru shunts, Starion's unique vessel harvesting devices, and many unique niche products to assist you in surgery.

SCANLAN INTERNATIONAL INC — Stand 27

One Scanlan Plaza, Saint Paul, Minnesota 55107 USA
Tel: +001 651-298-0997 / 800-328-9458 Fax: + 001 651-298-0018
Website: www.scanlaninternational.com

Highest quality specialty surgical products designed and manufactured by the Scanlan family since 1921. Offering over 3,000 instrument designs in stainless steel and titanium including CardioVasive and Thoracoscopic instrumentation, Super Cut™ / Ultra Sharp® scissors which feature razor sharp cutting edges, Premier™ spring style micro scissors, Diamond Dust™ instrumentation which prevents tissue slippage and needle rotation, new Resano™ valve forceps in both titanium and stainless steel styles, full line of titanium micro clamps providing lightweight atruamatic occlusion and Heifetz™ temporary occlusion clips, new and improved Surg-I-Loop® Plus Occlusive Loop with attached needle for controlling coronary arteries during off-pump coronary bypass surgery and the CardioVasive Chitwood Debakey Clamp and the Chitwood Knot Tier/Pusher for minimally invasive surgery. Introducing Puskas™ Advanced Precision Coronary Instruments featuring Never Shear™, Dual Glide™ titanium forceps and IMA Glide scissors.Unique single-use products include the Scanlan Aorta/Vein Punch, Solem™ and Mobin-Uddin® vein holders, Vascu-Statt® bulldog clamps, A/C Locator® and Radiomark® graft markers, and new Metal Micro Sterilization Trays for safe storage and transfer of delicate instruments. Surgical Acuity™ HiRes™ class II magnifying loupes which use a premium lightweight, optical glass providing higher resolution and greater magnification. Also offering a wide variety of custom instrument modifications and refurbishment.

SORIN GROUP UK — Stands 5, 6, 7

Sorin Group Cardiovascular Division have been at the forefront of world heart valve design and manufacture since 1977. Unique Carbofilm(tm) technology, coupled with state of the art, innovative technological advancement, allows Sorin Biomedica Cardio to offer an unrivalled portfolio of heart valve replacement and repair products.

At the beginning of 2003 Sorin Group purchased Carbomedics. This means we can now offer the largest choice of heart valves.

To evaluate the very latest products from Sorin Group, please visit us at booth numbers 5, 6 & 7, where the Sorin team will be available to discuss your requirements.

ST JUDE MEDICAL UK LTD — Stands 52, 53, 54

Capulet House, Stratford Business & Technology Park, Banbury Road,
Stratford upon Avon CV37 7GX UK
Tel: +44 (0)1789 207618 Fax: +44 (0)1789 263206
Email: atranter@sjm.com Website: www.sjm.com

Contact: Adele Tranter

Progressive change to the profile of patients presenting for surgery are reflected in the developing product portfolio from St Jude Medical's Cardiac Surgery Division.

This year's meeting will focus on the new Epicor Cardiac Ablation System. High Intensity Focused Ultrasound is used to provide cardiac surgical ablation safely and reproducibly, both Epicardially and off-pump.
Please visit our stand to see a demonstration of this system.

Also featured this year you will find our new Rigid Saddle Ring, which enhances the St Jude Repair product portfolio.

Visit the St Jude Medical stand to collect details of our Educational programme, Wet Lab facilities and support on offer to our customers throughout 2007.

SYNTHES — Stand 10

Titanium Sternal Fixation System
The Synthes Titanium Sternal Fixation System (TSFS) is intended for use in secondary reconstruction of the sternum following sternotomy or fracture where it is used to stabilise the sternum and promote fusion. It can also be used as primary closure in high risk patients.

The exciting TSFS features a locking plate concept and offers both straight and manubrium plates. It is particularly useful following extensive debridement of the sternum, or when sternal bone quality is poor. In addition the TSFS provides faster, more reliable bone healing, simpler flap technique, early extubation and shorter hospital stay.

Modular Sternal Cable System
The Modular Sternal Cable System (MSCS) is intended for primary sternal closure, either peristernally or transternally, after midline sternotomy and for repair/reconstruction of transverse sternal fractures.

The system's modular design provides an intra-operative flexibility depending on the patient's need and surgeon's preference. The MSCS consists of three basic implant components: cable, cannulated screws and reconstruction plates; which can be used in a number of different combinations.

TEASDALE SURGICAL LTD — Stand 40

Unit C6 MDC Alison Centre, 39 Alison Crescent, Sheffield S2 1AS
Tel: 0114 283 5811 Fax: 0114283 5801
Email: peter@teasdalesurgical.com

Established in 1994 and Sheffield based, we specialize in surgical retractor systems designed to improve the surgeons exposure to the operative site. We develop new products as a direct result of talking with you the surgeon to improve operative site access. We are also manufacturers of reusable and single use (sterile packed) instrumentation.

We are able to take your existing reusable instrument and reengineer them into a single use item especially small lumen items such as Mediastinal Needles and Cardiac Suction hand pieces, our strength is in producing products in metal.

Should you require any special instruments making or ideas for product, then please stop by our stand.

We would be delighted to meet you to introduce you to our range of products.

TOMCAT CLINICAL SYSTEMS — Stand 25

Channel Wharf, Old Channel Road, Belfast BT3 9DE Northern Ireland
Tel: +44 (0) 2890 467337/8 Fax: +44 (0) 2890 467342
Email: sales@tomcat.co.uk Web: www.tomcat.co.uk

Contact: John Neeson john.neeson@tomcat.co.uk

The TOMCAT Cardiothoracic Information System encompasses a comprehensive surgical reporting solution. Linking to a full range of clinical equipment, imaging, and reporting systems, TOMCAT provides surgeons with instant access to the complete cardiac record from anywhere in the hospital.

The cardiothoracic surgery modules are fully compliant with the new SCTS / CCAD minimum dataset. The user-friendly interface promotes speed and ease of data entry.

TOMCAT's new data analysis tool TOMCAT Query allows users to perform detailed analysis of clinical data in real time. Core functionality includes the ability to generate CUSUM and VLAD plots as well as chart other clinical data in various formats.

Come and see the latest version of this innovative system on Stand 25.

TYCO HEALTHCARE (UK) COMMERCIAL LTD — Stands 11, 12

154 Fareham Road, Gosport, Hampshire PO13 0AS UK
Tel: +44 (0)1329 224411 Fax: +44 (0)1329 224390
Email: uksales@emea.tycohealthcare.com Website: www.tycohealthcare.co.uk

SynetureTM and Auto SutureTM are divisions of the Surgical sector of Tyco Healthcare. Tyco Healthcare remains focused on developing and providing the best in class products, service and training for surgeons and healthcare customers worldwide.

SynetureTM, the suture division, combines unrivalled innovation and developed technology across the suture and surgical accessory portfolio. Proprietary NuCoatTM technology has advanced the functional performance of SynetureTM needles by reducing the penetration force on initial and multiple passes through tissue.

Auto Suture will be exhibiting the ENDO GIA Universal linear cutting stapler with its wide range of staple sizes, jaw lengths and choice of articulating or straight shafts. The ENDO GIA Universal instrument is extremely versatile with a wide rage of applications in Video Assisted Thoracic Surgery (VATS), Minimally Invasive Thoracic Surgery (MITS) and is being used increasingly in conventional thoracic surgery.

Auto Suture's highly innovative and technologically advanced directional staple will be demonstrated in the New Generation TA and GIA ranges of staplers featuring Directional Stapling Technology (DST).

UK MEDICAL LTD — Stand 26

Albreda House, Lydgate Lane, Sheffield S10 5FH
Tel: 0114 2688 880 Email: info@ukmedical.com

New for your patients is the MitroFast - a "hemi-valve" for mitral repairs.
See the video and demonstration at our stand along with the established NoReact-treated bioprostheses from Shelhigh.

The Omega truCCOMs System is the only continuous cardiac output measurement system that responds quickly and accurately enough to really help in unstable patients.
It needs no user intervention or calibration. Arrange for a loan/demonstration when you visit our stand.

The Pleurx Catheter is becoming first-line therapy for draining recurrent malignant pleural effusions.
Stop by the stand and see how simple it is to insert.
Patients can go home the same day and are normally never readmitted for drainage.

VASCUTEK – a TERUMO Company — Stands 57, 58

Newmains Avenue, Inchinnan, Renfrewshire PA4 9RR, Scotland, UK
Tel: (+44 141 812 5555 Fax: (+44) 141 812 7170
www.vascutek.com

Significant advances in valved conduit design are rare, however **BioValsalva™**, a radically new design of valved conduit is without doubt an exception.

BioValsalva™ is a unique porcine aortic biological valved conduit designed for the Bentall procedure. It is a **pre-sewn** device combining Triplex™, an innovative trilaminate graft material and the elan™ Koehler Medical Ltd porcine aortic stentless biological valve.

BioValsalva™ reduces procedure complexity, prevents valve-to-graft mismatch and has the potential to reduce bypass, cross-clamp and procedural times. It also enables the treatment of more vulnerable patient groups.

The proximal portion of the conduit is shaped to mimic the geometry and therefore blood flow patterns of the natural sinuses of Valsalva. This combined with the stentless valve ensures that near normal physiological blood flow is achieved.

Triplex™ comprises three layers, inner woven fabric, central elastomeric membrane and outer PTFE wrap. This combination provides superb handling, excellent suturability and rapid haemostasis.

WEXLER SURGICAL SUPPLIES — Stand 24

Wexler Surgical Supplies, 11333 Chimney Rock Road, Suite #110
Houston, Texas 77035, USA

Tel:	713-723-6900	Fax:	713-723-6906
Email:	sales@wexlersurgical.com	Web:	www.wexlersurgical.com

Wexler Surgical Supplies designs and manufactures a variety of titanium and stainless steel specialty surgical instruments and products for Cardiac, Vascular, Thoracic, and Micro Surgery. Visit us online at www.wexlersurgical.com for information about our products and services.

WISEPRESS ONLINE BOOKSHOP LTD — Stand 17

The Old Lamp Works, 25 High Path, Merton Abbey, London SW19 2JL UK
Tel: +44 (0)208 715 1812 Fax: +44 (0)208 715 1722
Email: Bookshop@wisepress.co.uk Website: www.wisepress.co.uk

Contact: Nadia Ahmed

Wisepress Online Bookshop is pleased to present a display of publications chosen especially for the Society of Cardiothoracic Surgeons in Great Britain and Ireland Meeting from the world's leading publishing houses. All the books on display can be ordered/bought direct at the stand or via our website. We can also order you free sample copies of the journals on display and take subscription orders. Whatever your book requirements, Wisepress will be happy to help – whether you are an author seeking a publisher or having difficulty obtaining a title, our professional staff will assist you.

YORK MEDICAL TECHNOLOGIES LTD — Stand 39

Unit 12 Brookfield Business Park, York Road, Shiptonthorpe, York, YO43 3PU
Tel: +44 (0)1430 803113 Fax: +44 (0)1430 803234
Email: sales@yorkmedicaltechnologies.com Website:
www.yorkmedicaltechnologies.com

Founded in 2004, York Medical Technologies Ltd (YMT) has rapidly grown to become a leading distributor of quality surgical instruments, scopes and disposables.

We are the UK distributor for top Swedish, German and US manufacturers such as Stille, Heinz Waldrich, Dufner, Tontarra, Geomed, Zeppelin, Thompson, RZ and Zepf, all well recognised and highly respected surgical instrument manufacturers. Of particular note is the thoracoscopy instrument line from Dufner that will be on show at this conference.

New for 2007 is high quality range of suction units and accessories for use in liposuction, ENT, oral, hand, maxillo-facial and neuro surgery from Swiss-based Nouvag.

YMT also supplies British pattern instruments from B&H, Dixons, Murrays and others along with a very high quality range of open mesh sterilisation baskets and containers from Robouw Medical.

A wide range of associated disposable items, including Stille arthroscopy cannulae, Kirschner wires and skin staplers are available along with the award-winning range of theatre fluid management products from Colby.

SOCIETY FOR CARDIOTHORACIC SURGERY IN GREAT BRITAIN AND IRELAND

2007 ANNUAL MEETING

MEETING PROGRAMME

PROGRAMME

Sunday 11 March 2007

12:00–13:00 **Trainees Lunch (Trainee members only)**
Mancunian Suite

13:00–14:00 **Trainees Meeting (Trainee members only)**
Mancunian Suite
Attending: Chris Munsch (Chairman of the SAC in Cardiothoracic Surgery)
Steve Hunter (Cardiothoracic Dean)
Leslie Hamilton (Chairman of the Inter-Collegiate Board in Cardiothoracic Surgery)

14:00–15:30 **Training in Cardiothoracic Surgery 1 (all welcome)**
Auditorium
Panel: Leslie Hamilton (President-elect of SCTS)
Steven Hunter (Cardiothoracic Dean)
Chris Munsch (Chair of the SAC in Cardiothoracic Surgery)
David Sowden, Lead Dean for Cardiothoracic Surgery

14:00–14:30 **Intercollegiate Exam**
Speaker: Leslie Hamilton (President-elect of SCTS)

14:30–15:00 **Curriculum and On-line Log Book**
Speaker: Chris Munsch (Chair of the SAC in Cardiothoracic Surgery)

15:00–15:30 **PBAs and the New Assessment Process**
Speaker: Steven Hunter (Cardiothoracic Dean)

15:30–16:00 Tea/Coffee
Mancunian Suite

16:00–17:00 **Training in Cardiothoracic Surgery 2 (all welcome)**
Auditorium
Panel: Leslie Hamilton (President-elect of SCTS)
Steven Hunter (Cardiothoracic Dean)
Chris Munsch (Chair of the SAC in Cardiothoracic Surgery)
David Sowden, Lead Dean for Cardiothoracic Surgery

16:00–16:30 **'Cardiothoracic Training: The Effect of the European Working Time Directive'**
Speaker: Doug West

16:30–17:00 **What Next?**
Speaker: David Sowden, Lead Dean for Cardiothoracic Surgery

17:15–18:00 **Teaching Complex Skills in a High Risk Environment**
Auditorium
Speaker: Terry Hubble, Mountain Instructor

18:00–19:30 **Annual Business Meeting I (Members only)**
Auditorium
Chairman: Sir Bruce Keogh

19:30–20:30 **Welcome Reception**
Foyer

Monday 12 March 2007

08:30–18:00 **Exhibition**
Great Northern Hall

09:00–10:00 **Session 1: Oral**
Auditorium
Moderators: Sir Bruce Keogh
Fred Grover

09:00 1 **Randomised Trial Comparing Survival following Bilateral Internal Mammary Artery (IMA) Grafting Versus Single IMA: The Arterial Revascularisation Trial (ART)**
ART Investigators[1]; D Taggart[2]
[1]care of the Royal Brompton Hospital, London, United Kingdom, [2]John Radcliffe Hospital, Oxford, UK

09:10 2 **Critical Aortic Stenosis in a Prospective Multi-institutional Study of 362 Neonates: The Impact of Earlier Re-intervention following attempted Biventricular Repair**
E Hickey[1]; C Caldarone[1]; E Blackstone[4]; W Williams[1]; G Lofland[3]; T Yeh[5]; C Tchervenkov[6]; C Pizarro[8]; F Pigula[7]; B McCrindle[1]
[1]The Hospital for Sick Children, Toronto, Canada; [2]The Congenital Heart Surgeons Society, Toronto, Canada; [3]Childrens Mercy Hospital, Kansas City, USA; [4]Cleveland Clinic Foundation, Cleveland, UK; [5]University of Texas Southwestern Medical Center, Dallas, USA; [6]Montréal Childrens Hospital, Montréal, Canada; [7]Childrens Hospital Boston, Boston, USA; [8]Alfred du Pont Hospital for Children, Wilmington, USA

09:20 3 **Video Assisted Thoracoscopic Access is Associated with 4 Fold Increased Recurrence Compared to Open Surgery For Pneumothorax: A Meta-analysis**
A Barker; E Maratos; L Edmonds; E Lim
Papworth Hospital, Cambridge, UK

09:30 4 **Lethal Reperfusion Induced Injury Attenuated By Atorvastatin in an Experimental Model of Myocardial Ischaemia/reperfusion. A Role Implicating Multiple Prosurvival Kinases**
C Efthymiou; M Mocanu; D Yellon
The Hatter Institute and Centre for Cardiology University College London, London, UK

09:40 5 **Early Donor Management but not Hormonal Therapy Improves Donor Heart Function**
R Venkateswaran; R Steeds; I Wilson; J Mascaro; R Thompson; J Townend; R Bonser
University Hospital Birmingham NHS Foundation Trust, Birmingham, UK

09:50 6 **Does Furosemide Prevent Renal Dysfunction in High-risk Cardiac Surgical Patients? Results of a Double-blinded Prospective Randomized Trial**
B Mahesh; B Yim; C Ratnatunga; D Robson; D Pigott; R Pillai
John Radcliffe Hospital, Oxford, UK

10:00–10:45 Tea/Coffee
Exhibition

10:45–11:45 Session 2: Interactive

Auditorium
Moderators: Andrew Murday
David Taggart
Kenneth Taylor

10:45 11 **Early Donor Management but not Steroid Therapy, Increases the Retrieval Rate of Lungs for Transplantation**
R Venkateswaran[1]; V Patchell[2]; I Wilson[1]; J Mascaro[1]; R Thompson[1]; J Coote[2]; R Bonser[1]
[1]University Hospital Birmingham NHS Foundation Trust, & [2]University of Birmingham, Birmingham, UK

10:55 12 **The Effect of Dopexamine and Fenoldopam on Hepatic Blood Flow and Systemic Inflammatory Response following Hypothermic Cardiopulmonary Bypass**
R Adluri[1]; A Singh[1]; A Hitch[1]; M Baker[1]; A Robins[2]; J Skoyles[1]; I Moore Mitchell[1]
[1]Trent Cardiac Centre, Nottingham, UK; [2]Queens Medical Centre, Nottingham, UK

11:05 13 **Long-term Graft Patency, Quality of Life & Adverse Events in Patients Randomised to Off-pump Versus On-pump Coronary Artery Bypass Grafting**
M Smith; G Murphy; B Reeves; L Culliford; C Rogers; A Baumbach; G Angelini
Bristol Heart Institute, Bristol, UK

11:15 14 **Arginine Vasopressin (AVP) for the Brain Dead Donor – A Multitude of Virtues**
A Rostron; V Avlonitis; D Grenade; D Cork; J Kirby; J Dark
School of Surgical and Reproductive Sciences, Newcastle University, Newcastle, UK

11:25 15 **Blunt Traumatic Aortic Rupture: A Porcine Model of Peri-isthmus Wall Mechanics**
R Pearson[1]; N Philips[3]; R Hancock[3]; S Hashim[2]; M Field[4]; D Richens[2]; A Wallace[1]; D McNally[3]
[1]Division of Orthopaedic and Accident Surgery, Queens Medical Centre, Nottingham, UK; [2]Trent Cardiac Centre Nottingham City Hospital, Nottingham, UK; [3]Institute of Biomechanics, University of Nottingham, Nottingham, UK; [4]The Cardiothoracic Centre, Liverpool, UK

11:35 16 **Effect Of Biventricular Versus Univentricular Pacing on Coronary Conduit Flow following Coronary Revascularisation**
D G Healy; M Hargrove; B Ramesh; A O'Donnell; T Aherne
Department of Cardiothoracic Surgery Cork University Hospital, Cork, Ireland

11:45–12:30 **Heart Research UK Lecture Quality Improvement in Cardiothoracic Surgery – Past Experiences and Future Directions**
Auditorium
Chairman: Sir Bruce Keogh
Speaker: Fred Grover

12:30–13:45 Lunch
Exhibition

13:45–15:15 Overview of UK Cardiothoracic Activity and Practice
Auditorium
Moderator: James Roxburgh

15:15–16:00 Tea/Coffee
Exhibition

16:00–17:00 **Session 3: Clinical Practice**

Auditorium
Moderators: Afzal Zaidi
Robert Bonser
Moninder Bhabra

16:00 25 **Outcomes of Internal Carotid Artery Stenting Performed Prior to Cardiac Surgery**
D Tang[2]; M Randall[3]; T Cleveland[1]; P Gaines[1]; G Venables[3]; N Briffa[2]
[1]Sheffield Vascular Institute Sheffield Teaching Hospitals NHS Foundation Trust; [2]South Yorkshire Cardiothoracic Centre, Sheffield Teaching Hospitals NHS Foundation Trust; [3]Department of Neurology, Royal Hallamshire Hospital Sheffield Teaching Hospitals NHS Foundation Trust, Sheffield, UK

16:10 26 **Lung Transplantation from Non Heart Beating Donors without Pretreatment**
A Butt; J Aitchison; J Wardle; S Clark; J Dark
Cardiothoracic Transplant Freeman Hospital, Newcastle upon Tyne, UK

16:20 27 **Haemodynamic Evaluation & Early Outcome of Aortic Valve Replacement with size 19 Perimount Prosthetic Valve**
A Dhanji[1]; D Bishop-Bailey[1]; A Shipolini[2]; J Oligny[3]; L Germain[3]; T Warner[1]
[1]The William Harvey Research Institute, Barts and the London Queen Mary University of London, London, UK; [2]Barts and The London NHS Trust, Department of Cardiothoracic Surgery, The London Chest Hospital, London, UK; [3]Hôpital du Saint Sacrement du CHA, Québec, Canada

16:30 28 **Magnetic Resonance Imaging & Surgical Left Ventricular Reshaping for Advanced Ischaemic Cardiomyopathy**
C Rajakaruna; R Capoun; R Ascione
Bristol Heart Institute, Bristol, UK

16:40 29 **Development of A Model to Predict Risk of Blood Transfusion following Cardiac Surgery**
L Culliford; G Murphy; C Rogers; G Angelini
Bristol Heart Institute, Bristol, UK

16:50 30 **Prophylactic Inhaled Nitric Oxide for the Amelioration of Reperfusion Injury in Lung Transplantation**
P Botha; M Jeyakantahan; J Rao; A Fisher; M Prabhu; J Dark; S Clark
Freeman Hospital, Newcastle upon Tyne, UK

17:00–18:00 **St Jude Post Graduate Session 1 – Current Therapy for Oesophageal Carcinoma**
Auditorium
Chairman: Pala Rajesh
Speaker: Keith Naunheim
Discussant: Richard Page

Digital Sessions – Day 1

09:00–10:45 **Digital Session A**

7 **The 'Shocking' Reality of Cardiopulmonary Bypass**
N Khan; T Strang; C Bonshek; K Bhuvaneswari; T Hooper
Wythenshawe Hospital, Manchester, UK

8 **Ventilation on Bypass Reduces Extravascular Lung Water but has Minimal Clinical Benefit**
L John; I Ervine
Kings College Hospital, London, UK

9 **Effect of Hypothermic Cardiopulmonary Bypass on Intraperitoneal Lactate, Pyruvate & Glycerol in Patients undergoing CABG – Measurement using Microdialysis**
R Adluri; A Singh; M Baker; J Skoyles; I Moore Mitchell
Trent Cardiac Centre, Nottingham, UK

10 **Elective Transfer from Cardiopulmonary Bypass to Centrifugal Blood Pump Support in Very High-risk Cardiac Surgery**
B Evans; L Balacumaraswami; G Bertoni; X Jin; D Robson; K Grebenik; S Westaby
John Radcliffe Hospital, Oxford, UK

10:45–13:45 **Digital Session B**

17 **Cold Brain–Warm Body Or Cold Brain–Cold Body. Organ Protection During Aortic Arch Surgery Utilising Selective Antegrade Cerebral Perfusion**
M Kalkat; D Harrington; D Pagano; R Bonser
University Hospital Birmingham NHS Trust, Birmingham, UK

18 **The Levitronix Centrimag System as a temporary Ventricular Assist Device for Cardiogenic Shock**
J Shuhaiber; S Tsui; D Jenkins; K Dhital; S Large
Papworth Hospital, Cambridge, UK

19 **Comparison of On- and Off-bypass Endarterectomy: A Propensity-matched Analysis**
M Devbhandari[1]; H Kaukuntla[1]; A Grayson[1]; A Duncan[1]
[1]Blackpool Victoria Hospital, Blackpool, UK; [2]Wythenshawe Hospital, Manchester, UK

20 **Off-pump Total Arterial Revascularisation Using Composite Graft: Comparison of Outcome Between Unstable & Stable Angina**
R Pandey; R Grainger; A Grayson; M Pullan; B Fabri
The Cardiothoracic Centre, Liverpool, UK

13:45- 16:00 **Digital Session C**

21 **Smoking Cessation Improves the Function of CABG Conduits**
A Muir; P McKeown; U Bayraktutan
Royal Victoria Hospital, Belfast, UK

22 **The Association between Systemic Inflammation, Statin Therapy, & Saphenous Vein Endothelial Function in Patients undergoing Coronary Artery Bypass Surgery**
A Momin[2]; A Shah[2]; R Sherwood[1]; J Desai[1]; A El-Gamel[2]; M Marrinan[1]; M Kearney[2]
[1]Cardiothoracic Department Kings College Hospital, London, UK; [2]Cardiovascular Division GKT School of Medicine, London, UK

23 **Antithrombotic Therapy following Bioprosthetic Aortic Valve Replacement: A Survey of UK Consultant Practice**
J Nowell; E Wilson; M Jahangiri
St Georges Hospital, London, UK

24 **Vascular Media from Clonal Vascular Smooth Muscle Cells – A Model for Designing Vessels for Vascular Grafts**
A Dhanji[1]; D Bishop-Bailey[1]; A Shipolini[2]; J Oligny[3]; L Germain[3]; T Warner[1]
[1]The William Harvey Research Institute Barts and The London, Queen Mary University of London, London, UK; [2]Barts & The London NHS Trust, Department of Cardiothoracic Surgery, The London Chest Hospital, London, UK; [3]Hôpital du Saint Sacrement du CHA, Québec, Canada

Tuesday 13 March 2007

08:30–09:30 **Exhibition**
Great Northern Hall

09:00–10:00 **Session 4 Clinical Practice**

Auditorium
Moderators: Tara Bartley
Sir Bruce Keogh

09:00 31 **Long-term Outcome in Cardiac Surgical Patients with Prolonged Intensive Care Stay**
M Thompson; E Peng; E Cameron; W Walker
Royal Infirmary of Edinburgh, Edinburgh, UK

09:10 32 **Surgical Council – A New Way of Dealing with the Highest Risk Cardiac Surgical Patients**
A Barker; S Nashef
Papworth Hospital, Papworth Everard, Cambridge, UK

09:20 33 **Impact of Audiotapes on Informed Consent in Cardiac Surgery: A Randomised Controlled Trial**
P Mishra; H Mathias; K Miller; K Nagrajan; A Murday
Glasgow Royal Infirmary, Glasgow, UK

09:30 34 **Mad, Bad or Delirious**
D Quayle
Cardiothoracic Critical Care Unit, John Radcliffe Hospital, Oxford, UK

09:40 35 **Training in Congenital Heart Surgery**
M Griselli[1]; D Barron[2]; W Brawn[2]; H Uemura[1]; D Shore[1]; B Sethia[1]
[1]Department of Cardiac Surgery Royal Brompton Hospital, London, UK; [2]Department of Cardiac Surgery Birmingham Childrens Hospital, Birmingham, UK

09:50 36 **Weaning – Keep it Simple**
D Quayle
Cardiothoracic Critical Care Unit, John Radcliffe Hospital, Oxford, UK

10:00–10:45 Tea/Coffee
Great Northern Hall

10:45–11:45 **Session 5: Clinical Practice**

Auditorium
Moderators: Moninder Bhabra
Michael Dusmet
Malcolm Underwood

10:45 41 **Sleeve Resection versus Pneumonectomy for NSSLC: Comparative Analysis & Outcomes**
H Parissis[1]; M Leotsinidis[2]; E Mc Govern[1]; V Young[1]
[1]St James Hospital, Dublin, Ireland; [2]University of Patras, Patras, Greece

10:55 42 **Equivalent Early Results with Endovascular Stenting versus Open Repair of Traumatic Aortic Rupture**
E Akowuah; G Angelini; A Baumbach; P Wilde; A Bryan
Bristol Heart Institute, University of Bristol and Bristol Royal Infirmary, Bristol, UK

11:05 43 **Pattern of Thoracic Injuries Sustained by Military Personnel in Iraq & Afghanistan**
P Nanjaiah; C Ng; S Rooney; T Graham
University Hospitals Birmingham NHS Trust, Birmingham, UK

11:15 44 **The Prognostic Importance of Trauma Scoring Systems for Blunt Thoracic Trauma**
M Sezer; H Esme; O Solak; Y Yurumez; Y Yavuz; Y Terzi; H Kucuker
Afyon Kocatepe University, Afyon, Turkey

11:25 45 **Peri-operative Patient Warming: A Randomised Controlled Trial Comparing Mediwrap Blanket & the Bair Huggers in Thoracic Surgical Procedures**
S Rathinam; V Annam; R Steyn; G Raghuraman
Birmingham Heartlands Hospital, Birmingham, UK

Relationship Disclosure: The consumables were provided by the manufacturers of Mediwrap.

11:35 46 **There is no such thing as a Good Anaesthetist!**
S Nashef; J Ferguson; S Wilkinson; J Arrowsmith; L Sharples
Papworth Hospital, Papworth Everard, UK

11:45–12:30 **Pulse Lecture: 'Current Status of Lung Volume Reduction Surgery'**
Auditorium
Chairman: Leslie Hamilton
Speaker: Keith Naunheim

12:30–13:45 **Lunch**
Great Northern Hall

13:45–15:15 **Symposium: Revalidation**
Auditorium
Speakers: **'Revalidation for Doctors'**
Sir Donald Irvine
Chairman, Picker Institute, Ex-president of the General Medical Council, UK
'Revalidation for Police Officers to use Firearms'
Alan Wood, Head Greater Manchester Police Firearms Unit
Moderator: Patrick Magee

15:15–16:00 Tea/Coffee
Exhibition

16:00–17:00 **Session 6. Clinical Practice**

Auditorium
Moderators: Dirk van Raemdonck
Alex Shipolini
Rajesh Shah

16:00 55 **Resection of Pulmonary Secondaries in Colorectal Cancer: Does Previous Hepatic Metastatectomy Impact on Survival?**
H Kaukuntla; D Mittapalli; M Jones
South Manchester University Hospitals NHS Trust, Manchester, UK

16:10 56 **Video-assisted Thoracoscopic Maze for Atrial Fibrillation: The Future is Less Invasive**
V Avlonitis; S Murray; S Hunter
James Cook University Hospital, Middlesbrough, UK

16:20 57 **The Effect of Alcohol Consumption on Mortality & Morbidity following Lung Resection**
N Chaudhuri; M Shackloth; J James; J McShane; R Grainger; A Grayson; R Page; M Carr
Cardiothoracic Centre NHS Trust, Liverpool, UK

16:30 58 **Does Cardiopulmonary Bypass influence Long-term Outcome in Lung Cancer Patients undergoing Curative Resections?**
S Soon; M Nannaparaju; S Hosmane; C Vare; P Krysiak; M T Jones; R Shah
Wythenshawe Hospital,Manchester, UK

16:40 59 **Factors Affecting 'Long-term' Survival following Surgical Treatment of Malignant Pleural Effusion**
J Pilling; M Dusmet; G Ladas; P Goldstraw
Royal Brompton Hospital, London, UK

17:50 60 **Death In Low-risk Cardiac Surgical Patients: The FIASCO Study**
D Freed[1]; A Drain[1]; J Kitkat[1]; M Jones[2]; S Nashef[1]
[1]Papworth Hospital, Cambridge, UK; [2]Wythenshawe Hospital, Manchester, UK

17:00–18:00 **St Jude Post-Graduate Session 2: 'Developing Technologies & the Changing Face of Cardiothoracic Surgery'**
Auditorium
Chairman: John Pepper
Speakers: Fred Grover
Discussant: Steve Hunter

Digital Sessions – Day 2

09:00-10:45 **Digital Session D**

37 **Poor Blood Glucose Control Predicts In-hospital Mortality & Morbidity in both Diabetic & Non-diabetic Patients undergoing Cardiac Surgery**
C Rajakaruna; C Rogers; R Capoun; G Angelini; R Ascione
Bristol Heart Institute, Bristol, UK

38 **Pre-operative Diabetic Control & its Impact on Outcomes following Cardiac Surgery**
A Coye; B Nyawo; A Roberts; A Owens
James Cook University Hospital, Middlesbrough, UK

39 **A Pilot Randomised Controlled Trial of the Effect of Transfusion Threshold Reduction on Transfusion Rates & Morbidity after Cardiac Surgery**
G Murphy[1]; S Rizvi[1]; F Battaglia[1]; L Culliford[1]; C A Rogers[1]; A Cohen[2]; G Angelini[1]
[1]Bristol Heart Institute, Bristol, UK; [2]Department of Anaesthesia, Bristol Royal Infirmary, Bristol, UK

40 **Cell Salvage & Autotransfusion does not Increase Post-operative Bleeding – A Randomised Controlled Study**
A Klein; E Lin; S Nashef; J Armstrong; B Fiona; A Vuylsteke
Papworth Hospital, Cambridge, UK

Relationship Disclosure: Educational grant provided by Fresenius (manufacturer of CATS cell saver) towards cost of the study. No involvement in design, running or analysis of the trial.

10:45-13:45 **Digital Session E**

47 **A Meta-analysis of Aspirin 'Resistance' & Clinical Outcome**
G Krasopoulos[1]; S J Brister[1]; S W Beattie[1]; M Buchanan[2]
[1]Toronto General Hospital, Toronto, Canada; [2]McMaster University Health Sciences Centre, Hamilton, Canada

48 **Are Current UK Waiting Time Targets in Lung Cancer Treatment Achievable? Result of a Prospective Study**
M Devbhandari; P Quennell; P Krysiak; R Shah; P Barber; M Jones
Wythenshawe Hospital, Manchester, UK

49 **Comparative Analysis of Aortic Valve Replacement & Composite Aortic Valve Graft Replacement: Mortality Outcomes in a National Registry**
M Kalkat[1]; M Benedicta[2]; K Taylor[2]; R Bonser[1]
[1]University Hospital Birmingham NHS Trust, Birmingham, UK; [2]Hammersmith Hospital, London, UK

50 **Management of Prosthetic Graft Infection after Surgery of the Thoracic Aorta**
E Akowuah; P Narayan; G Angelini; A Bryan
Bristol Heart Institute University of Bristol & Bristol Royal Infirmary, Bristol, UK

13:45-16:00 **Digital Session F**

51 **Heart Surgery in Nonagenarians: Is it justified?**
A Drain; J Ferguson; A Kakar; J Kitkat; S Nashef; S Large
Papworth Hospital, Cambridge, UK

52 **Endoscopic Vein Harvesting in Patients at High Risk of Leg-wound Complications**
M Simek; P Nemec; V Bruk; P Marcián; R Hajek; K Langova
Department of Cardiac Surgery University Hospital and Palacky University Faculty of Medicine, Olomouc, Czech Republic

53 **The Risk Factors of Post-traumatic Empyema in Patients with Tube Thoracostomy**
S Eren[1]; H Esme[2]; A Sehitogullar›[3]; F Geyik[1]; M Eren[1]
[1]Dicle University School of Medicine, Afyon, Turkey; [2]Afyon Kocatepe University School of Medicine, Afyon, Turkey; [3]General Hospital, Van, Turkey

54 **Post-operative Pleural Fluid Culture: When is it Worthwhile?**
J Phadnis; J Pilling; P Goldstraw; G Ladas; M Dusmet
Royal Brompton Hospital, London, UK

Wednesday 14 March 2007

08:30–18:00 **Exhibition**
Great Northern Hall

09:00–10:00 **Session 7. Oral**

Auditorium
Moderators: Keith Naunheim
Leslie Hamilton

09:00 61 **Does Steroid Replacement Therapy after Surgery for Congenital Heart Disease Increase Infectious Events?**
F Shikata[1]; M Takeuchi[1]; H Imanaka[1]; K Tachibana[2]; T Nishida[1]; K Kagisaki[1]; J Kobayashi[1]; T Yagihara[1]; S Kitamura[1]
[1]National Cardiovascular Center, Osaka, Japan; [2]Osaka Medical Center and Research Institute for Maternal and Child Health, Osaka, Japan

09:10 62 Paper Withdrawn

09:20 63 **Technique for Reducing Sternal Dehiscence – Mathematical Analysis, in Vitro & Clinical Study**
L John
Kings College Hospital, London, UK

09:30 64 **Inhibition of Transcription Factor NF-κB Signalling in Vein Graft Accelerated Intimal Hyperplasia**
J R Finch[1]; T J Navin[2]; D O Haskard[3]; B M Foxwell[2]; C Monaco[2]; P I Hornick[1]
[1]Department of Cardiothoracic Surgery Hammersmith Hospital, London, UK; [2]Cytokine Biology of Vessels, Kennedy Institute of Rheumatology, Imperial College London, London, UK; [3]BHF Cardiovascular Sciences, National Heart and Lung Institute, Imperial College London, London, UK

09:40 65 **Blood Pressure Control Disturbance in Aortic Stenosis is due to Baroreflex Dysfunction Caused by the Development of Heart Failure**
H Kattach[1]; H Becher[2]; R Pillai[1]; R Evans[3]
[1]Department of Cardiothoracic Surgery John Radcliffe Hospital, Oxford, UK; [2]Department of Cardiology John Radcliffe Hospital, Oxford, UK; [3]Nuffield Department of Anaesthetics Radcliffe Infirmary, Oxford, UK

09:50 66 Paper Withdrawn

10:00–10:45 Tea/Coffee
Exhibition

10:45–11:45 **Thoracic Surgical Session**
Auditorium:
Panel: D van Raemdonck, J McGuigan, F Collins, E Townsend, A Ritchie
Cases:
Sigmoid Colonic Adenocarcinoma
P Rajesh; D Quinn,
Birmingham Heartlands Hospital, Birmingham, UK
Delayed Presentation of Traumatic Haemothorax
R Jeganathan; P Elliott; J Jones
Royal Victoria Hospital, Belfast, UK
A Case of Recurrent Dysphagia & Reflux with Failed Antireflux Procedures
P Tcherveniakov; T Khan; K Papagiannopoulos
St James' University Hospital, Leeds, UK
Management of Oesophageal Perforation in an Octogenarian
M Codispoti; R Cranfield; T Ahmed; F Carnochan; W Walker
Royal Infirmary of Edinburgh, Edinburgh, UK
Post pneumonectomy syndrome: a real entity?
L Nölke; J Egan; J Russell
Our Lady's Children's Hospital, Dublin, Eire

12:00–12:30 **Tudor Edwards Lecture**
'Moving with the times: from 1967 to 2007 in cardiothoracic surgery'
Auditorium
Chairman: Sir Bruce Keogh
Speaker: Tom Treasure

12:30–13:45 **Lunch**
Exhibition closes at 1400hr

13:45–14:15 **President's Message**
Auditorium
Speaker: Sir Bruce Keogh

14:15–15:15 **Session 8. Interactive**

Auditorium
Moderators: Carin Van Doorn
Marjan Jahangiri
David Barron

14:15 75 **Proteomics of the Right Ventricle in a Model of Right Ventricular Hypertrophy & Early Failure**
A Sheikh; C Barrett; N Villamizar; A Valente; O Alzate; D Craig; A Lodge; J Lawson; C Milano; J Jaggers
Duke University, Durham, USA

14:25 76 **Preoperative Intravenous Hydration Improves Surgical Outcomes in Patients with Mild to Moderate Renal Dysfunction undergoing Coronary Surgery**
R Birla; B Keogh; S Kolvekar; D Lawrence; A Smith; J Yap
The Heart Hospital, UCLH Trust, London, UK

14:35 77 **Childhood Infective Endocarditis: Pre-operative Predictors of Native Valve Preservation & Survival**
E Hickey; C Manlhiot; G Van Arsdell; W Williams; C Caldarone; B McCrindle
The Hospital for Sick Children, Toronto, Canada

14:45 78 **The Difference in Graft Patency between Venous & Arterial Grafts may be due to their Ability to Handle Oxidative Stress**
A Muir; P McKeown; U Bayraktutan
Royal Victoria Hospital, Belfast, UK

14:55 79 **Current Approaches to Pulmonary Regurgitation**
A Frigiola[1]; V Tsang[1]; J Nordmeyer[1]; L Coats[1]; T Lee[1]; F Walker[2]; C Van Doorn[1]; A Taylor[1]; P Bonhoeffer[1]; M De Leval[1]
[1]Great Ormond Street Hospital, London, UK; [2]The Heart Hospital, London, UK

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Heart Foundation. A Taylor is funded by the Higher Education Funding Council for England. Philipp Bohnoeffer is also a consultant for NuMed and Medtronic. This abstract has been sent elsewhere but to date not presented.

15:05 80 **Does the Choice of Risk Adjustment Model Influence the Outcome of Surgeon Specific Mortality Analysis**
S Grant[1]; A Grayson[2]; M Jackson[2]; J Au[3]; B M Fabri[2]; G Grotte[4]; B Bridgewater[1] on behalf of NWQIP
[1]South Manchester University Hospital, Manchester, UK; [2]The Cardiothoracic Centre, Liverpool, UK; [3]Blackpool Victoria Hospital, Blackpool, UK, [4]Manchester Royal Infirmary, Manchester, UK

15:15–15:45 Tea/Coffee
Foyer

15:45–17:00 **Annual Business Meeting 2**

18:15 **Coaches leave for annual dinner**

Wednesday 14 March 2007

09:00-10:45 **Digital Session G**

67 **Positron Emission Tomography in Patients Undergoing Lobectomy by Video Assisted Thoracoscopic Surgery: A Single Centre UK Experience**
A Khan; S Harden; C Peebles; I Brown; N McGill; K Woods; S Tanser; N Singh; B Addis; K Amer
Southampton General Hospital, Southampton, UK

68 **Does Size Matter? A Randomised Control Trial Of Blake Drains versus Portex Drains Following Cardiac Surgery**
N Roberts[1]; M Bates[1]; M Boehm[2]; P C Braidley[1]; G J Cooper[1]; T J Spyt[2]
[1]Northern General Hospital, Sheffield, UK; [2]Glenfield Hospital, Leicester, UK

Relationship Disclosure: Study supported by an educational grant from Ethicon, the manufacturer of Blake drains

69 **Incidence of Residual Shunt after Percutaneous Device Closure Versus Surgical Closure of Atrial Septal Defects in Adults**
S Nair; S Brecker; M Jahangiri
St Georges Hospital NHS Trust, London, UK

70 **Stentless Versus Stented Biological Aortic Valves: A Meta-analysis**
J Dunning; B Kunadian; A Thornley; M De Belder; S Kendall; R Graham; M Stewart; J Thambyrajah; S Hunter
James Cook University Hospital, Middlesbrough, UK

10:45-13:45 **Digital Session H**

71 **Hybrid Procedure for Staged Palliation of Hypoplastic Left Heart Syndrome**
P Sundar Venugopal; T Krasemann; E Rosenthal; S Qureshi; C Austin; D Anderson
Guys and St Thomas NHS Trust, London, UK

72 **Transthoracic Versus Transhiatal Oesophagectomy**
R Bahgeri; Z Haghi; M Ghaemi
Mashhad University of Medical Sciences, Mashhad, Iran

73 **A Novel Surgical Approach to Close an Acute Ventricular Septal Defect Using An Occluder Device**
C Rajakaruna; J Hill; A Sirker; B Rana; O Wendler
Kings College Hospital, London, UK

74 **Propensity Score Analysis of Early & Late Outcome after Redo Off-pump & On-pump Coronary Artery Bypass Grafting**
H Vohra; T Bahrami; S Farid; A Mafi; G Dreyfus; M Amrani; J Gaer
Department of Cardiac Surgery, Harefield Hospital Royal Brompton and Harefield Hospitals NHS Trust, London, UK

FORUM FOR CARDIOTHORACIC PRACTICE

Monday 12 March 2007

10:00–10:45 Tea/Coffee/Registration
Exhibition

10:45–12:30 **Data use in cardiothoracic surgery**
Mancunian Suite
Supported by: CCAD
Chairman: Tracey Smailes
Database Manager, James Cook University Hospital, Middlesbrough
James Roxburgh
Secretary of SCTS

10:45–11:00 **Update on HCC/SCTS Website for Cardiac Surgery Results including External Interest in the Site & Future Developments**
Mancunian Suite
Speaker: James Roxburgh
Secretary of SCTS

11:00–11:15 **Demystifying CCAD Portal Data including How Centres could Use/Interpret this Data & Future Developments**
Mancunian Suite
Speaker: David Cunningham, CCAD

11:15–11:25 **Questions**

11:25–12:20 **Small Group Work & Discussion including Methods of General Validation, Mortality Monitoring & Monitoring Complications**
Facilitated by: Samer Nashef and Tracey Smailes

12:20–12:30 **Progress on Database Managers Network Group**
Speaker: Tracey Smailes

12:30–13:45 Lunch
Exhibition

13:45–15:15 **Overview of UK Cardiothoracic Activity and Practice**
Auditorium
Moderator: James Roxburgh

15:15-16:00 Tea/Coffee
Exhibition

Tuesday 13th March 2007

NURSES' MEETING
Supported by: Ethicon

10:45–11:15 **Keynote Speaker: Maura Buchanan, President of the RCN**
Mancunian Suite
Moderators: Sir Bruce Keogh
Tara Bartley

11:15–12:00 81 **Cardiac Trio Session: A Comparative Perspective. The Cardiac Patient Journey; The Surgeon, The Nurse and The Patient**
M Lewis
Moderators: Sir Bruce Keogh
Tony Jessop

12:00–12:30 82 **Study Comparing Open Long Saphenous Vein Harvesting With a Less Invasive Standard Bridging Technique**
B Krishnamoorthy; K Nouman; P Kola; Y Nizar; P Waterworth
Wythenshawe Hospital, Manchester, UK

12:30–13:45 Lunch
Exhibition

13:45–15:15 Symposium: Revalidation
Auditorium
Speakers: **'Revalidation for Doctors'**
Sir Donald Irvine
Chairman, Picker Institute, Ex-president of the General Medical Council, UK
'Revalidation for Police Officers to use Firearms'
Alan Wood
Head Greater Manchester Police Firearms Unit
Moderator: Patrick Magee

15:15–16:00 Tea/Coffee
Exhibition

16:00–17:00 83 **Cardiac Assessment at the Cutting Edge**
Mancunian Suite
Speakers: M Coombs & J Smith
Moderators: Tim Graham
Linda McKee

17:00-17:30 84 **EACTS 2007 Guidelines on Perioperative Management of Anticoagulation & Antiplatelet Therapy in Cardiac Surgery**
J Dunning[1]; S Nahsef[2]
[1]James Cook University Hospital, Middlesbrough, UK; [2]Papworth Hospital, Cambridge, UK

17:30-18:00 85 **Electronic Solutions for Blood Transfusion Safety within Cardiothoracic Surgery**
D Waters[1]; J Cook[1]; S Hutton[1], A Davies[2]
[1]Oxford Radcliffe Hospitals NHS Trust, Oxford, UK; [2]National Blood Service, Oxford, UK

Wednesday, 14th March

Nurses' Forum
Chairs: Ben Bridgewater
Georgina Aldous

09:00–09:30 86 **The Cardiothoracic Advanced Life Support Course: Delivering Significant Improvements in Emergency Cardiothoracic Care**
J Dunning[1]; D Danitsch[2]; T Strang[3]; A Levine[2]
[1]James Cook University, Middlesbrough, UK; [2]University Hospital of North Staffordshire, Stoke, UK; [3]Wythenshawe Hospital, Manchester, UK

09:30–10:00 87 **The Development of a Cardiothoracic & Oesophageal Teaching & Assessment Programme for Nurses, Surgical Assistants, Physiotherapists & Allied Health Professionals**
M Poullis
Cardiothoracic Centre, Liverpool, UK

10:00–10:45 Tea/Coffee
Exhibition

10:45-12.30 Chairs: Malcolm Dalrymple-Hay
David Purdue

10:45–11:30 88 **A Comparative Perspective, The Thoracic Patient Journey. The Surgeon, The Nurse and The Patient**
J Marzouk
Birmingham Heartlands Hospital, Birmingham, UK
T Fenwick
UHCW Hospitals, Coventry, UK

11:30–12:00 89 **Talc Pleurodesis: Doctor Versus Nurse Led Procedure. A Prospective, Randomised, Multi-Centre, Pilot Study**
H Munday
Papworth Hospital, Cambridge, UK

12:00–12:15 **Structural Changes in Cardiothoracic Practice in Scotland**
L McKee

12:15–12:30 **Membership of SCTS**
G Cooper; B Bridgewater; T Bartley

12:30–13:45 Lunch
Exhibition closes at 1400hr

13:45–14:15 **President's Message**
Auditorium
Sir Bruce Keogh

14:15-15:15 **Discussion Workshop: The Future of Cardiothoracic Practice: The Impact of MMC & Evolution of New Medical & Nursing Roles**
Moderators: Steve Livesey
Chris Munsch
Tim Graham

15:15–15:45 Tea/Coffee
Foyer
Chairs: Samer Nashef
Helen Munday

15:45–16:15 90 **Donor Care Physiologist**
A Ingle
Papworth Hospital, Cambridge, UK

16:15–16:45 91 **Bereavement Support in Critical Care**
K Street; P Lawrence; J Hindley
The Cardiothoracic Centre, Liverpool, UK

18:15 **Coaches leave for annual dinner**

SOCIETY FOR CARDIOTHORACIC SURGERY IN GREAT BRITAIN AND IRELAND

2007 ANNUAL MEETING

ABSTRACTS

Randomised Trial Comparing Survival Following Bilateral Internal Mammary Artery (IMA) Grafting Versus Single IMA: The Arterial Revascularisation Trial (ART)

ART Investigators[1]; D Taggart[2]
[1]care of the Royal Brompton Hospital, London, United Kingdom, [2]John Radcliffe Hospital, Oxford, UK

Objectives: Standard CABG surgery uses a single internal mammary artery (SIMA) and supplemental vein or radial artery grafts. Several observational studies have suggested a survival benefit with two IMA grafts (BIMA) but this has not been tested in a randomised trial. The Arterial Revascularisation Trial (ART) is an MRC and BHF funded, multi-centre international trial comparing SIMA versus BIMA.

Methods: Twenty-two centres in Australia, Brazil, India, Italy, Poland and the UK are randomising 3000 CABG patients to SIMA or BIMA grafting. Supplemental grafts may be either saphenous vein or radial artery. CABG can be performed as an on-pump or off-pump procedure. The primary outcome is survival at 10 years and secondary end-points include clinical events, quality of life and cost effectiveness. The effect of age, LV function, diabetes and off-pump surgery are pre-specified subgroups.

Results: To date 1900 patients have been enrolled (recruitment is due to be completed by mid 2007). Group data are available so far on 1750 patients. Mean age was 65 years (range 38–86) with 85% males. 40% of the CABG procedures were performed off pump. Thirty-day mortality was 1% (n=21 patients). Sixteen patients (1%) have had sternal wound dehiscence. There were 72 re-explorations for bleeding (4%); 27 strokes (2%); 38 myocardial infarctions (2%); 69 (5%) required renal support therapy and 18 patients further revascularisation (1%).

Conclusions: ART is one of the first randomised trials to report on survival and clinical outcomes using BIMA compared to SIMA and will help to establish the gold-standard for CABG surgery.

Critical Aortic Stenosis in a Prospective Multi-institutional Study of 362 Neonates: The Impact of Earlier Re-intervention following Attempted Biventricular Repair

E Hickey[1]; C Caldarone[1]; E Blackstone[4]; W Williams[1]; G Lofland[3]; T Yeh[5]; C Tchervenkov[6]; C Pizarro[8]; F Pigula[7]; B McCrindle[1]

[1]The Hospital for Sick Children, Toronto, Canada; [2]The Congenital Heart Surgeons Society, Toronto, Canada; [3]Childrens Mercy Hospital, Kansas City, USA; [4]Cleveland Clinic Foundation, Cleveland, UK; [5]University of Texas Southwestern Medical Center, Dallas, USA; [6]Montréal Childrens Hospital, Montréal, Canada; [7]Childrens Hospital Boston, Boston, USA; [8]Alfred du Pont Hospital for Children, Wilmington, USA

Objectives: In 362 prospectively enrolled patients with neonatal critical aortic stenosis, the 5-year incidence of unplanned re-intervention was <5% following univentricular repair (UVR). The corresponding rate following attempted biventricular repair (BVR) was instead 51% (p<0.01). We therefore sought to determine the impact of reintervention following BVR.

Methods: Multiphase parametric modelling and competing risks methodology were used to define transition to endstates. Multivariate analysis after bootstrapping was then used to identify incremental risk factors associated with each outcome.

Results: BVR was attempted in 139 and UVR in 223. Overall 5-year survival was 71% for BVR and 62% for UVR. BVR was pursued via balloon valvotomy in 105, surgical valvotomy in 27 and Ross/Yasui in 7. Unplanned reintervention rates were not different for these 3 groups. Following BVR, of the 64 (46%) reinterventions, 95% occurred within 1 year. The earlier need for reintervention was an independent predictor of death (p<0.01). Incremental risk factors for earlier re-intervention included the presence of left ventricular dysfunction (p<0.01), fewer aortic valve cusps (p<0.01), the presence of sub-aortic obstruction (p<0.01) and a smaller tricuspid valve z-score (p<0.01).
If reintervention was required at 2 years following initial BVR, subsequent predicted 5 year survival was 67%. Reintervention at 30 days predicted subsequent 5 year survival of 54% and reintervention at 2 days predicted 42% 5 year survival.

Conclusions: Early failure of intended BVR is expensive in survival terms. Patient-specific characteristics can help identify those BVR patients at risk of requiring early reintervention. Pursuit of UVR may instead be preferable for such patients.

Video Assisted Thoracoscopic Access is Associated with 4-Fold Increased Recurrence compared to Open Surgery for Pneumothorax: A Meta-analysis

A Barker; E Maratos; L Edmonds; E Lim
Papworth Hospital, Cambridge, UK

Objectives: Evidence supporting similar recurrence rates between video-assisted (VATS) and open surgery for the treatment of recurrent pneumothorax is questionable because the number of randomised trials is sparse and underpowered to detect any meaningful difference. To compare recurrence rates between the two forms of surgical access, we conducted a systematic review of randomised and non-randomised studies.

Methods: A literature search undertaken for studies on pneumothorax surgery in MEDLINE, EMBASE, Cochrane Controlled Trials Register and National Research Register identified 20 studies (4 randomised and 16 non-randomised) eligible for inclusion.

Results: In studies that performed the same pleurodesis through two different forms of access, the relative risk of recurrence in patients undergoing VATS was similar between non-randomised (4.31; 95% CI 1.79 to 10.35) and randomised studies (3.67; 0.62 to 21.60), yielding an overall relative risk of 4.16 (1.89 to 9.13; $p<0.001$) compared to open surgery. There was no evidence to suggest heterogeneity of trial results ($\chi^2=4.66$, $p=0.79$).
The higher relative risk of recurrence remained robust to a random effects model (3.86; 1.65 to 9.02; $p<0.001$), by including all comparative studies (2.94; 1.77 to 4.89; $p<0.001$), using only high quality studies (2.67; 1.43 to 4.99; $p=0.002$) and on a simulation biased in favour of VATS when no events were experienced in either arm (2.49; 1.56 to 3.98; $p<0.001$).

Conclusions: The results of randomised and non-randomised trials are consistent and emphasise a 4 fold increase in recurrence rates when a similar pleurodesis procedure is performed using VATS compared to open access for recurrent pneumothorax.

Lethal Reperfusion Induced Injury Attenuated by Atorvastatin in An Experimental Model of Myocardial Ischaemia/reperfusion. A Role Implicating Multiple Prosurvival Kinases

C Efthymiou; M Mocanu; D Yellon
The Hatter Institute and Centre for Cardiology University College London, London, UK

Objectives: Clinical studies have indicated that statins may have beneficial properties independent of cholesterol lowering. We have previously shown that atorvastatin attenuates lethal reperfusion-induced injury via activation of the phosphatidyl inositol 3-kinase (PI3K) prosurvival signalling pathway. In this study we hypothesise that other prosurvival kinases may also be implicated in this protection.

Methods: We investigated the potential role of p44/42 and p38MAPK and its downstream effector heat shock protein 27 (HSP27) in the reduction of infarction induced by atorvastatin given at reperfusion. We used a Langendorff perfused mouse heart model subjected to 35 minutes of global ischaemia followed by 30 minutes of reperfusion and either the infarct size or the levels of phosphorylated AKT, p44/42MAPK, p38MAPK and HSP27 were analysed. Atorvastatin (50ÌM) was administered during reperfusion only. Wortmanin (100 nM) was used to block PI3K/AKT, U0126 (10 ÌM) was used to block p44/42MAPK and SB203580 (10 ÌM) used to prevent the phosphorylation of p38MAPK and its downstream target HSP27.

Results: Atorvastatin significantly reduced infarct size in the treated group: (32.96±3.4% vs. 51.27±2.79% in controls $p<0.05$). This protection was abrogated by the inhibitors wortmannin (48.38±4.28%), U0126 (52.58±7.58) and SB203580 (49.37±4.16%). Western blot analysis confirmed significant phosphorylation of AKT, p44/42, p38MAPK and HSP27 following administration of atorvastatin during reperfusion, and abrogation of the respective phosphorylation in the presence of their specific inhibitor.

Conclusions: Atorvastatin given at reperfusion attenuates lethal reperfusion-induced injury, by the phosphorylation of multiple prosurvival pathways involving not only PI3K/AKT but also p44/42, p38 MAPK and HSP27.

Early Donor Management but not Hormonal Therapy Improves Donor Heart Function

R Venkateswaran; R Steeds; I Wilson; J Mascaro; R Thompson; J Townend; R Bonser[1]
University Hospital Birmingham NHS Foundation Trust, Birmingham, UK

Objectives: To assess the role of early management, tri-iodothyronine (T3) and methylprednisolone (MP) therapy in potential heart donors.

Methods: In a prospective randomised double blind trial, 80 potential cardiac donors (mean age 43±13.1), were allocated to receive early T3 (0.8 μg kg^{-1} bolus; 0.113 μg kg^{-1} hr^{-1} infusion), MP (1000mg bolus), both or placebo. Strict algorithmic optimisation was instituted substituting inotropes and norepinephrine (NE) with vasopressin. Trans-thoracic echocardiography (TTE) was undertaken at baseline and pre-retrieval.

Results: Optimisation commenced within 2±(SD)0.5 hours of consent, and 12±0.2 hours of coning and was continued for 6.7±1.5 hours. Study drugs were delivered for 5.7±1.5 hours. T3 levels were low in 52.5% of donors but all T3 group donors were rendered euthyroid. At retrieval, in the entire cohort, cardiac index (CI), CVP and PCWP had risen from 3.2±1.0 L min^{-1} m^{-2} to 3.9±1.2 ($p<0.001$), 8.6±4 mmHg to 11.0±3.6 ($p<0.001$) and 9.4±4.4 mmHg to 12.6±4.1 ($p<0.001$) SVR fell (1218±502 to 1082±642 [$p=0.045$]). At baseline, 48/80 donors were receiving NE which was weaned completely in 26 donors or and reduced in the remaining 22 ($p<0.001$). On univariate analysis, time from coning ($p=0.004$), baseline troponin I ($p=0.02$), LV stroke work index (SWI) ($p=0.003$), LV fractional shortening ($p=0.016$) or ejection fraction ($p=0.003$) predicted usability of the heart together with RV ejection fraction on logistic regression analysis (OR 1.161, 95% CI 1.038–1.299). NE reduction and substitution, but not T3 or MP, improved heart outcomes.

Conclusions: Early optimisation and reduction of NE significantly improve donor heart function. T3 and MP do not influence this process.

Does Furosemide Prevent Renal Dysfunction In High-risk Cardiac Surgical Patients? Results Of A Double-blinded Prospective Randomized Trial

B Mahesh; B Yim; C Ratnatunga; D Robson; D Pigott; R Pillai
John Radcliffe Hospital, Oxford, UK

Objectives: Renal dysfunction following cardiac surgery is more apparent in patients with pre-existing renal dysfunction, diabetes and impaired left-ventricular (LV) function, and following complex procedures involving prolonged cardiopulmonary bypass (CPB). Aim of this prospectively randomised study was to evaluate reno-protective effect of perioperative low-dose furosemide infusion in patients at high-risk of renal impairment.

Methods: Patients with preoperative serum creatinine >130 ìmol/L, LV ejection-fraction <50%, congestive heart failure, long-standing diabetes, and procedures involving prolonged CPB were randomized to receive infusion of either saline 2 mL/hr (n=21), or furosemide 2 mL/hr (4mg/hr) (n=21). Infusion was commenced after induction of anaesthesia and continued for 12 hours postoperatively. Renal dysfunction was defined as >50% increase in serum creatinine postoperatively, or >130 ìmol/L, or requirement for haemodialysis, or all of the above.

Results: Patients receiving furosemide had higher urine output (p<0.001), higher postoperative fluid requirement (p=0.011), and lower urinary-creatinine (p<0.001) due to dilution by large urine volumes. Both groups had significant increase in urinary retinol binding protein/creatinine (U-RBP/Cr) ratio (p<0.001) and peak serum creatinine (p<0.001), and significant decrease in peak creatinine-clearance (p<0.001), suggesting renal injury related to cardiac surgery. Peak creatinine levels were higher, and peak creatinine clearance (CC) was lower in furosemide group compared to controls, but not significant (p=0.35; 0.61). Importantly, there was no difference in incidence of renal dysfunction between furosemide group (9/21) and controls (8/21; p=0.99).

Conclusions: Our study failed to demonstrate any benefit of perioperative furosemide infusion in high-risk cardiac surgical patients. Although urinary output increased with furosemide, all markers of renal dysfunction did not differ significantly from controls, nor did the incidence of renal failure.

	placebo		furosemide		
	mean	Standard dev	mean	Standard dev	p value
Urine output (mL/kg/hr)	1.2	0.5	3.4	1.2	<0.001
Urine Cr	5.9	2.5	2	1.3	<0.001
Urinary CC	88.7	51.3	73.3	50.8	0.37
RBP	15408.1	7685.8	6086.2	5464.6	<0.001
Peak Serum Cr	143.4	87	177	123.4	0.35
Fluid usage (mL over 12hrs)	3714.1	807.9	4631.4	1359.5	0.011
Increase in RBP excretion	684.3	458.6	203.3	236.9	<0.001
U-RBP/Cr	2809.7	1125.8	3152.9	1411.9	0.61
Change U-RBP/Cr	718.6	481.3	688.4	554.6	0.47
Peak CC	41.8	17.8	39.1	16.6	0.61
Change in urinary CC	0.1	0.7	0.5	2.2	0.96
Change in peak CC	–0.2	0.2	–0.3	0.2	0.08

The 'Shocking' Reality Of Cardiopulmonary Bypass

N Khan; T Strang; C Bonshek; K Bhuvaneswari; T Hooper
Wythenshawe Hospital, Manchester, UK

Objectives: Tachyarrhythmias are common after cardiac surgery, occasionally requiring electrical cardioversion. Whilst successful cardioversion depends on delivery of sufficient current, higher energy currents can damage the heart. Transthoracic impedance (TTI) is a major factor determining transmyocardial current. We have investigated whether physiological changes after cardiopulmonary bypass would decrease TTI.

Methods: 40 patients undergoing first time isolated cardiac surgery using cardiopulmonary bypass were recruited. TTI was measured at 30 kHz using Bodystat Multiscan 5000 equipment before operation (with and without a positive end-expiratory pressure [PEEP] of 5 cmH_2O) and then at 1 hour, 4 hours and 24 hours after the operation.

Results: Mean preoperative TTI was 55.3±11.8 Ohms without PEEP and 61.1±16.8 ohms on PEEP of 5. TTI dropped significantly ($p \leq 0.0001$) after the operation to 46.7±11.4 ohms at 1 hour, 42.6±11.1 ohms at 4 hours and 42.2±10.7 ohms at 24 hours. Duration of operation was found to be positively correlated with TTI change (ΔTTI) at 1 hour ($p=0.016$). However, there was no correlation between ΔTTI and the duration of bypass or changes in fluid balance.

Conclusions: This study demonstrates a significant drop in TTI after cardiopulmonary bypass that is independent of changes in fluid balance. The findings demonstrate that current flow across the chest is facilitated after cardiac surgery. Therefore use of high energy currents during resuscitation can potentially cause myocardial damage. These results highlight the need for a possible review of current energy guidelines for electrical cardioversion after cardiopulmonary bypass in adults.

Ventilation on Bypass Reduces Extravascular Lung Water but has Minimal Clinical Benefit

L John; I Ervine
Kings College Hospital, London, UK

Objectives: It has been suggested that the continuation of lung ventilation whilst on cardiopulmonary bypass may reduce the incidence of lung complications. A cardiac surgeon changed his practice from not ventilating on bypass (NVB) to ventilating on bypass (VB). The outcomes of 71 consecutive VB CABG patients were compared retrospectively with 71 NVB CABG patients that had been performed immediately prior to the change in practice. There were no significant differences in pre-operative patient characteristics or in outcome data. However in the subgroup of non-smokers (n=43) chest complications were significantly less in the VB compared to NVB patients (4.2% [1/24] vs. 21% [4/19]; p=0.04). The aim of the study was to determine prospectively if ventilation on bypass would benefit non (or long term ex) smokers.

Methods: Non (or long term ex) smokers undergoing CABG were randomised to either VB (n=12) or NVB (n=11). Measured outcome parameters included: Extravascular lung water (EVLW) measured using the PiCCO system, static and dynamic lung compliance, the right atrial/ left atrial white blood cell count ratio, alveolar arterial oxygen gradient (PAO_2–PaO_2), Respiratory Index ((PAO_2–PaO_2)/PaO_2) and clinical end points.

Results: In the VB group EVLW (mL/kg) post bypass was significantly reduced compared to the NVB group (mean±SEM: 530±50 vs. 672±32, p=0.028) as was time to extubation (hours) (mean±SEM: 3.6±0.3 vs. 4.8±0.4, p=0.038). There were no other significant differences.

Conclusions: Although ventilating on bypass appears to reduce EVLW immediately following surgery there appears to be little clinical benefit other than a small reduction in time to extubation.

Effect Of Hypothermic Cardiopulmonary Bypass On Intraperitoneal Lactate, Pyruvate And Glycerol In Patients Undergoing CABG – Measurement Using Microdialysis

R Adluri; A V Singh; M Baker; J Skoyles; I Moore Mitchell
Trent Cardiac Centre, Nottingham, UK

Objectives: Splanchnic hypoxia is known to occur secondary to hypothermic cardiopulmonary bypass. Studies so far used indirect methods of demonstrating gut hypoxia (gastric pH measurement, etc.). Microdialysis technique uses catheters with a semipermiable membrane tip to obtain tissue fluid samples. We used this technique to find evidence of splanchnic hypoxia and resulting elevation of intermediary metabolites in the peritoneal cavity.

Methods: Following ethics committee approval and obtaining informed consent, 11 consecutive patients undergoing either elective or urgent CABG were included in the study. Patients with poor LV function, impaired renal/liver function, a haemodynamically unstable condition requiring inotropes were excluded. Microdialysis catheter was introduced into the peritoneal cavity under vision following median sternotomy. The samples were obtained every 20 minutes during bypass and two hourly in the first 24 hours and were analysed using a Microdialysis analyser. Simultaneous arterial blood gas samples were obtained.

Results: The male:female ratio was 9:2 with a mean age of 63.7±11 years (mean BSA of 1.91±0.09). The mean CPB and X-clamp times were 50.9±7.3 and 27.3±4.9 minutes. All patients were cooled to a mean temperature of 29.56±1.3°C. The intraperitoneal concentrations of glucose and lactate were significantly elevated (than serum levels) in the post-operative period 2 hours following removal of cross-clamp. A corresponding elevation of intraperitoneal pyruvate and glycerol levels was noted (with intraperitoneal L:P ratio >10:1).

Conclusions: This study confirms that intraperitoneal anaerobic metabolism of glucose occurs in the immediate post-operative period following hypothermic cardiopulmonary bypass representing splanchnic ischaemia. Microdialysis is a safe method of studying intraperitoneal events in the perioperative period.

Elective Transfer from Cardiopulmonary Bypass to Centrifugal Blood Pump Support in very High-risk Cardiac Surgery

B Evans; L Balacumaraswami; G Bertoni; X Jin; D Robson; K Grebenik; S Westaby
John Radcliffe Hospital, Oxford, UK

Objectives: Surgery in advanced heart failure patients conveys substantial mortality but this group has much to gain if they survive. Conventionally the intra-aortic balloon pump (IABP) is used to assist weaning from cardiopulmonary bypass (CPB) but post ischaemic stunning may further impair myocardial function. In established cardiogenic shock attempted salvage with a left ventricular assist device (LVAD) provides a 50–75% mortality rate. We sought to improve outcome in borderline survival situations by weaning directly from CPB to a short-term centrifugal blood pump.

Methods: Five consecutive patients were identified as highest risk before surgery with left ventricular ejection fraction of 10–15% and impaired renal function (Table). IABP was inserted in all but patient 4. LVAD implantation was undertaken during 30 minutes of reperfusion before discontinuing CPB. Conduits for the inflow and outflow cannulas were used to improve the safety of decannulation. With the resolution of post ischaemic dysfunction, we planned to discontinue LVAD support.

Results: The clinical outcome is detailed in the table. Postoperatively the IABP was kept for 24–36 hours after removing the LVAD. Patient 2 had extensive inferior myocardial infarction with biventricular failure. Forty-eight hours after repair of septal rupture, myocardial function was considered incompatible with recovery and hepatic failure ensued. All 4 patients who walked into the hospital were discharged. Each has marked symptomatic relief and improvement in left ventricular function.

Conclusions: Cardiac surgical mortality in the very high-risk population can be reduced by anticipating postoperative deterioration and employing LVAD electively to prevent cardiogenic shock.

Patient	Age /sex	Logistic Euroscore	Problem	Operation	Support duration (days)	Postoperative stay (days)
1	58/F	4	Diabetes, ischaemic heart disease. Large anterolateral scar. Non graftable coronaries	Left ventricular re-modelling	4	10
2	51/M	77	Basal post infarction ventricular septal defect. Haemodynamic collapse	Repair of ventricular septal defect. Salvage procedure	2	Died 2nd day
3	68/M	8	Aortic valve replacement	Aortic stenosis. Idiopathic dilated cardiomyopathy	4	14
4	62/M	31	Aortic valve replacement	Aortic stenosis. Chronic renal failure. Aortoiliac occlusion	5	23
5	58/M	13	Aortic valve and ascending aortic replacement	Aortic stenosis. Ascending aortic aneurysm	6	22

Early Donor Management But Not Steroid Therapy, Increases the Retrieval Rate of Lungs for Transplantation

R Venkateswaran[1]; V Patchell[2]; I Wilson[1]; J Mascaro[1]; R Thompson[1]; J Coote[2]; R Bonser[1]
[1]University Hospital Birmingham NHS Foundation Trust, Birmingham, UK; [2]University of Birmingham, Birmingham, UK

Objectives: Early administration of corticosteroids may increase donor lung yield. Their effect on lung function has not been studied.

Methods: We studied 182 potential lung donors. Of these, 60 were randomised donors with a baseline PaO_2/FiO_2 ratio [PFI] to receive methylprednisolone (MP) 1G (n=29) or placebo. Randomised donors underwent protocol-guided optimisation of ventilation, bronchoscopic toilet and judicious fluid management. Function was assessed by PFI, extra-vascular lung water index (EVLWI) and pulmonary vascular resistance (PVR). Randomised group yield was compared with the non-study cohort who received standard ITU care ± steroids at retrieval.

Results: In the randomised cohort, assessment, randomisation and optimisation commenced within 2±0.5 hours of consent, and continued for 6.7±1.5 hours. MP or placebo was administered 5.7±1.5 hours before final assessment. Overall, PFI deteriorated from 53.02±10.5 to 47.02±16.8 pre-retrieval (p=0.015), EVLWI from 9.7±4.5 ml kg^{-1} to 10.8±5.2 (p=0.009) but PVR remained unchanged (p=0.28). High initial EVLWI (>10 ml kg^{-1}) (p=0.019) and higher C-reactive protein level (CRP) (p=0.032) were associated with decreased lung usability despite comparable initial pO_2. On logistic regression analysis baseline pO_2 (p=0.029) and shorter time from coning (p=0.032) predicted usability. MP did not increase yield or attenuate the changes in pO_2, EVLWI or PPI. At end-optimisation, 52/120 (43%) of study lungs were used versus 70/244 (29%) in the non-study cohort (p=0.01).

Conclusions: Early management of lung donors improves organ yield. EVLWI and CRP measurement facilitate assessment. Donor lung function deteriorates inexorably following coning and early steroid administration affects neither yield nor function.

The Effect of Dopexamine & Fenoldopam on Hepatic Blood Flow & Systemic Inflammatory Response following Hypothermic Cardiopulmonary Bypass

R Adluri[1]; A Singh[1]; A Hitch[1]; M Baker[1]; A Robins[2]; J Skoyles[1]; I Moore Mitchell[1]
[1]Trent Cardiac Centre, Nottingham, UK; [2]Queens Medical Centre, Nottingham, UK

Objectives: Splanchnic hypoperfusion during hypothermic cardiopulmonary bypass (CPB) contributes to the incidence of post-operative systemic inflammatory response. Fenoldopam (new dopamine analogue) has been proven to be specific reno-splanchnic vasodialator in animal and human studies. We studied the effects of fenoldopam and dopexamine on hepatic blood flow and systemic inflammatory response in patients undergoing CABG using hypothermic CPB.

Methods: Following Ethics Committee approval, 42 consecutive patients with good LV function, undergoing elective/urgent CABG were included. Patients were randomized to receive either dopexamine (2 μg/kg/min) (DX; n=14), fenoldopam (0.2 μg/kg/min) (F; n=14) or normal saline (NS; n=14), continuously after induction of anaesthesia until 24hrs following completion of surgery. Hepatic blood flow (HBF) was measured using indocyanine green dye disappearance rate before, during and after CPB. Interleukins IL-1β, IL-6, IL-8, IL-10, IL-12 and TNF-α, complements C3a, C4a, C5a were measured as inflammatory markers perioperatively. Repeated measures ANOVA test was used to compare the timed samples.

Results: The 3 groups were similar in terms of pre, intra and post operative variables. In groups F and DX there was significant increase in heart rate following the commencement of infusion (p=0.004 and 0.008); however the mean arterial pressure was similar. HBF in all three groups decreased during CPB but doubled postoperatively (p=0.829). C3a levels were attenuated in the group-F (p=0.007). The differences in elevation of TNF-α, IL-1β, IL-6, IL-8, IL-10 and IL-12 did not reach statistical significance; however, there was a trend towards reduced levels in groups F and DX.

Conclusions: Dopexamine and fenoldopam do not augment hepatic blood flow during CPB. Partial attenuation of inflammatory response (reduced C3a) is possible with fenoldopam infusion.

Long-term Graft Patency, Quality of Life & Adverse Events in Patients Randomised to Off-pump versus On-pump Coronary Artery Bypass Grafting

M Smith; G Murphy; B Reeves; L Culliford; C Rogers; A Baumbach; G Angelini
Bristol Heart Institute, Bristol, UK

Objectives: Off-pump coronary artery bypass grafting (OPCAB) has short-term benefits over conventional on-pump surgery (CABG-CPB). However, there is conflicting evidence about early graft patency and concern remains that long-term outcome may be compromised. We assessed graft patency, quality of life (QoL) and adverse event rates in two randomised trials of OPCAB vs. CABG-CPB 6–7 years after surgery.

Methods: Surviving participants were sent four QoL questionnaires (SF-36, Seattle Angina Questionnaire, EuroQol and Coronary Revascularisation Outcome Questionnaire) and were invited to have Multislice Computed Tomography Coronary Angiography (MSCT-CA). Scans were dual-reported by a cardiologist and a radiologist blinded to the surgical technique. Major adverse cardiac events were identified from the patient, GP and hospital notes.

Results: Of 401 original participants, 52 had died. Of the remaining 349, 298 (85.4%) returned questionnaires (149 OPCAB; 149 CABG-CPB); 216 agreed to have MSCT-CA though 17 were found to be ineligible leaving 199 (OPCABG 98 v CABG-CPB 101). Patency rates were similar in both groups (table). Median length of follow-up for survival was 83 months. Scores on each QoL dimension were similar across groups and none of the differences between groups was significant (p=0.1 for all comparisons). Survival, and survival free from cardiac events and death, were similar in both groups (hazard ratios OPCAB vs. CABG-CPB 1.25 (95%CI 0.72–2.17) p=0.42 and 0.82 (95%CI 0.56–1.20) p=0.30, respectively).

Conclusions: Six to 7 years after surgery, graft patency rates, QoL and adverse event rates were similar in patients randomised to OPCAB and CABG-CPB.

Conduit	CABG-CPB (n=263)		OPCABG (n=238)	
	n/total	%	n/total	%
Pedicle LIMA	87/100	87.0	84/91	92.3
Pedicle RIMA/RGEA	17/19	89.5	10/11	90.9
Free LIMA/RIMA	2/3	66.7	4/4	100.0
Radial Artery	9/10	90.0	10/12	83.3
Saphenous Vein Graft	113/131	86.3	98/120	81.7
Total	228/263	86.7	206/238	86.6

Table. Graft patency rates by conduit

Arginine Vasopressin (AVP) for the Brain Dead Donor – A Multitude of Virtues

A Rostron; V Avlonitis; D Grenade; D Cork; J Kirby; J Dark
School of Surgical and Reproductive Sciences, Newcastle University, Newcastle, UK

Objectives: Brain death (BD) leads to significant systemic changes including neurogenic pulmonary oedema, diabetes insipidus, hypotension and metabolic acidosis. Furthermore, BD can lead to progressive systemic inflammatory response syndrome and acute lung injury. Catecholamines are known to stimulate alveolar fluid clearance and have anti-inflammatory properties. We hypothesised that AVP could limit oedema formation and damp down the inflammatory response to BD.

Methods: Brain death was induced by intracranial balloon inflation in anaesthetised ventilated rats. Group A (n=30): a hypertensive crisis and subsequent hypotension were observed. Group B (n=20): the hypotensive phase was corrected with norepinephrine [noradrenaline (NA)]. Group C (n=20): the neurogenic vasoplegia was treated with AVP. Group D (control, n=30): sham procedure without balloon inflation. Arterial blood gases, blood neutrophil integrin expression and serum and BAL cytokines were measured. Pulmonary oedema and lung capillary leak were estimated.

Results: Lung capillary permeability, pulmonary oedema and metabolic acidosis were significantly worse in Group A compared to the remaining groups. The pulmonary and systemic inflammatory responses were progressive in all groups. By 5 h, Group A had significantly higher serum cytokines and blood neutrophil expression of CD11b compared to the other groups. At 5 h, the levels of TNFα and IL-1β, in the BAL of Group A were also higher than those of Groups B,C and D.

Conclusions: Resuscitation with vasopressors reduces donor lung capillary permeability, limits oedema formation and damps down both the pulmonary and systemic inflammatory responses associated with BD. AVP and NA are equally effective in the treatment of the heart beating donor

Blunt Traumatic Aortic Rupture: A Porcine Model of Peri-isthmus Wall Mechanics

R Pearson[1]; N Philips[3]; R Hancock[3]; S Hashim[2]; M Field[4]; D Richens[2]; A Wallace[1]; D McNally[3]
[1]Division of Orthopaedic and Accident Surgery Queens Medical Centre, Nottingham, UK; [2]Trent Cardiac Centre Nottingham City Hospital, Nottingham, UK; [3]Institute of Biomechanics University of Nottingham, Nottingham, UK; [4] The Cardiothoracic Centre, Liverpool, UK

Objectives: Blunt traumatic aortic rupture (BTAR), part of a spectrum of disease termed acute aortic syndrome, accounts for 20% of road traffic accident related death. The injury has a complex aetiology with a multitude of putative aetiologies accounting for the injury profile, one aspect of which is its location at the aortic isthmus. We hypothesised that the isthmus has intrinsic mechanical properties which make it more susceptable to injury than other elements of the aorta.

Methods: Samples of porcine aorta were prepared from ascending, descending and peri-isthmus regions. After applying a grid like annotation samples were mounted in a bubble inflation clamping rig, connected via a solenoid release valve to an air compressor. Using a pressure transducer and high speed camera (1000fps) we collected data on: wall thickness, rupture pressure and radial extension, allowing calculation of ultimate tensile stress.

Results: There was little difference in radial extension, rupture pressure and ulitimate tensile stress between the regions. The closeness of mean rupture pressures serves to reject our hypothesis and suggests there should be considerable spatial distribution in rupture sites. The ligamentum arteriosus was sited in the centre of the isthmus specimens, suggesting this structure does not act as a significant focus for rupture.

Conclusions: Our hypothesis can be rejected. The mechanism of BTAR is not mechanically simple but must correspond to a complex combination of both relative motion of the structures within the thorax and local loading of the tissues either as a result of their anatomy, or due to the nature of the impact.

	Ascending	Isthmus	Descending
Rupture pressure (kPa)	300±29	287±48	321±30
Ultimate tensile stress (kPa)	3699±789	3268±1430	4260±1626
Radial extension (l)	1.85±0.11	1.66±0.11	1.70±0.14
Wall thickness (mm)	2.58±0.30	2.29±0.38	2.02±0.24

Biomechanics ($p<0.05$)

Effect Of Biventricular Versus Univentricular Pacing on Coronary Conduit Flow Following Coronary Revascularisation

D Healy; M Hargrove; B Ramesh; A O'Donnell; T Aherne
Dept Cardiothoracic Surgery Cork University Hospital, Cork, Ireland

Objectives: There is emerging evidence that biventricular pacing results in a significant increase on cardiac output compared to right ventricular pacing alone. The success of coronary revascularisation is influenced by coronary conduit flow in the immediate post operative period. Optimising this flow can influence clinical outcomes. A proportion of patients will need electromechanical pacing support to wean from cardiopulmonary bypass. Patients requiring pacing following coronary revascularisation surgery were studied to compare the effect of biventricular versus the standard right ventricular pacing on coronary conduit flow following coronary revascularisation.

Methods: The study was approved by the local ethics committee. Twenty patients undergoing elective isolated coronary artery bypass who required pacing were recruited. Pacing wires were inserted on right and left ventricle. An ultrasonic transit time flow probe was used to measure flow in venous coronary conduits, during both right ventricular pacing and biventricular pacing.

Results: There was a significant increase in conduit flow with biventricular pacing compared to right ventricular pacing alone ($p<0.01$). No significant changes were seen in diastolic, mean or systolic flow with biventricular pacing compared to right ventricular pacing alone.

Conclusions: Biventricular pacing improves conduit flow without altering significantly the systemic diastolic or systolic pressure. This readily performed pacing arrangement with minimal additional morbidity may improve the success of myocardial revascularisation. However, long-term follow-up with further studies is required.

Cold Brain–warm Body or Cold Brain–cold Body. Organ Protection during Aortic Arch Surgery utilising Selective Antegrade Cerebral Perfusion

M Kalkat; D Harrington; D Pagano; R Bonser
University Hospital Birmingham NHS Trust, Birmingham, UK

Objectives: Cold selective antegrade cerebral perfusion (SACP) improves brain metabolic protection during arch surgery but necessitates a period of corporeal arrest (CA). CA at 25ºC is advocated to minimise adverse sequelae of profound hypothermia but comparative studies have not been performed. We compared organ protection during arch surgery with CA arrest at 15ºC and 25ºC.

Methods: We analysed prospectively collected data in 37 consecutive patients undergoing arch surgery with SACP and CA (Cold 15ºC: n=19, Warm 25ºC: n=18). Arch replacement was performed in 17/19 and 16/18 respectively. Bypass and CA times in minutes were Cold 239±41 versus Warm 218±96 (p=0.389) and 64.5±12 versus 62.6±14 (p=0.165) respectively. Demographic variables were comparable. Closure time (end-bypass to ITU transfer) and 12h chest drainage were used as surrogate indices of coagulopathy.

Results: There was 1 death in each group (5.5%). Data are presented ±SD or median (IQR). [see Results table]

Conclusions: Warmer CA during arch surgery with SACP was associated with non-significant but longer closure time, greater chest drainage and worse gas exchange. For warm CA, the deterioration in renal function was significantly worse than for the cold technique. Non-brain organ protection may be compromised by warm corporeal arrest in arch surgery.

	Cold	Warm	p
Closure time (h)	2.06±1.03	2.28±1.19	0.37
12h chest drainage (ml)	624±381	744±448	0.41
6h PaO_2(mmHg) /FiO_2	308±96	264±120	0.23
6h Cardiac index	2.9±0.44	2.6±0.30	0.09
Days ventilated	2.5(2.5)	2.0(2.0)	0.95
creatinine (day 1–7)	21.3±22.5	72±92.1	0.027

The Levitronix Centrimag System as a temporary Ventricular Assist Device for Cardiogenic Shock

J Shuhaiber; S Tsui; D Jenkins; K Dhital; S Large
Papworth Hospital, Cambridge, UK

Objectives: The Levitronix ventricular assist device (VAD) is a centrifugal pump designed for extracorporeal support. The bearingless rotor is magnetically levitated to reduce blood friction. The aim of this study is to report early clinical experience with the Levitronix Centrimag for biventricular or univentricular support.

Methods: Between July 2004 and August 2006, 25 patients were supported using the Levitronix. 19 were male. Mean age was 48.9 years (range 19 to 72). Indications for support at implantation were cardiogenic shock including: post-cardiotomy in 6 subjects (group A), end stage heart failrue in 14 (group B) and donor graft failure following heart transplantation in 5 subjects (group C).

Results: Post VAD 30 day survival was 28% (7 patients). Mean support time was 11 days for all patients (range 1 to 51 days). Mean support for 14 BiVAD 10.3 (range 1 to 51 days). Mean support for 7 LVAD was 18.6 days (range 7 to 30 days). Seven patients remain alive following VAD support. Two patietns were bridged to heart transplantation and one to repeat heart transplantation. Four patients were weaned to recovery. Re-operation for bleeding occurred in 8 patients, clinical evidence of cerebral thromboembolism in 3, overwhelming sepsis in one and aortic thrombus formation in one patient. Clot formation in the tubing was observed in one patient necessitating emergent successful replacement at bedside.

Conclusions: The Levitronix system is a suitable device to support the failing heart till recovery or heart transplantation. The device is technically easy to implant and manage with a low complication rate.

Comparison of On & Off-bypass Endarterectomy: A Propensity-matched Analysis

M Devbhandari[1]; H Kaukuntla[1]; A D Grayson[1]; A Duncan[1]
[1]Blackpool Victoria Hospital, Blackpool, United Kingdom, [2]Wythenshawe Hospital, Manchester, UK

Objectives: Endarterectomy in off-pump coronary artery bypass grafting (OPCAB) is not a well-established procedure compared to on-pump approach (ONCAB) and is regarded by some to be even contraindicated for latter apporach.
This study was carried out to compare the outcomes of OPCAB and ONCAB patients requiring endarterectomy.

Methods: Data was prospectively collected on 4150 patients undergoing isolated coronary artery bypass grafting (CABG) between April 1997 and March 2004. Endarterectomy was required in 24 out of 460 OPCAB patients and 179 out of 3684 ONCAB patients. Outcomes were compared between the two groups by matching the OPCAB patients with a unique ONCAB patient. In order to account for differences in the case mix a logistic regression model was used to develop a propensity score for off-pump patients. The propensity score included age, sex, body mass index, diabetes, peripheral vascular disease, cerebrovascular disease, respiratory disease, renal dysfunction, ejection fraction, extent of disease, prior cardiac surgery, and emergency surgery. The C statistic for this model was 0.75. The OPCAB patients were matched with the ONCAB patients with an identical 5-digit propensity score. If this could not be done, we then proceeded to a 4-, 3-, 2-, or 1-digit match.

Results: All 24 OPCAB patients were successfully matched to 24 ONCAB patients. Patient characteristics were very well matched in all variables listed above. The median EuroSCORE was similar between off-pump and on-pump (3 vs. 4; p=0.36). Propensity-matched in-hospital outcomes are shown in Table 1.

Conclusions: Endarterectomy in off-pump CABG patients is at least as safe as on-pump patients.

	Off-pump (n=24)	On-pump (n=24)	p value
In-hospital mortality	0%	8.3% (n=2)	0.15
Stroke	0%	8.3% (n=2)	0.15
Acute renal failure	0%	4.2% (n=1)	0.31
Deep sternal wound infection	0%	0%	-
Re-op for bleeding	0%	4.2% (n=1)	0.31
Atrial fibrillation	20.8% (n=5)	20.8% (n=5)	>0.99
Ventilation >24 hrs	0%	20.8% (n=5)	0.018
Post-op stay	7 days	8 days	0.32

Table 1 Outcomes

Off-pump Total Arterial Revascularisation using Composite Graft: Comparison of Outcome Between Unstable & Stable Angina

R Pandey; R Grainger; A Grayson; M Pullan; B Fabri
The Cardiothoracic Centre, Liverpool, UK

Objectives: This study compares outcomes after off-pump coronary artery bypass (OPCAB) surgery using a composite arterial configuration in patients with unstable angina (UA) as compared to those with stable symptoms.

Methods: Between April 2000 and March 2005, 1320 consecutive patients underwent OPCAB using a composite configuration. 414 of these had UA while 906 had chronic stable angina. Data was collected prospectively. To account for differences in case-mix, logistic regression was used to develop a propensity score for UA (c-statistic 0.81) and 3 to 1 matching was performed. Wilcoxon rank sum tests and Chi-squared tests were used for comparison. A p-value of <0.05 was considered significant.

Results: 118 UA patients were successfully matched to 354 stable patients. Mean logistic Euroscore after propensity matching was similar between the groups (3.2 versus 3.1; p=0.33). The number of grafts per patient in the UA group was 3.1±0.69 versus 3.0±0.8 in the stable group (p=0.9). Table 1 shows in-hospital outcomes. Mean follow-up for the stable angina group was 44.5 months while the UA group was 42.9 months. The survival at 1, 2, 3, 4, and 5 years was 97%, 95%, 93%, 90% and 90% for stable angina while it was 96%, 94%, 93%, 91% and 89% respectively for UA (p= 0.98)

Conclusions: Total arterial revascularisation using a composite configuration can be safely performed on patients with UA. The incidence of post operative bleeding and deep sternal wound infection was higher in the UA group but was not statistically significant. In-hospital mortality was slightly higher in the UA group, but survival at 5 years was similar.

	Unstable angina CCS class IV (n=118)	Stable angina CCS class I – III (n=354)	p value
In-hospital mortality	2.5%	0.9%	0.15
CVA	0%	0.9%	0.32
Renal failure requiring haemofiltration	0.9%	1.1%	0.80
Deep sternal wound infection	2.5%	0.6%	0.07
CKMB level	7 U/l (1–15)	7 U/l (4–18)	0.35
Post op length of stay	7 days (6–9)	6 days (6–9)	0.03
Bleeding	1.7%	0.3%	0.09

Table 1

Smoking Cessation Improves the Function of CABG Conduits

A Muir; P McKeown; U Bayraktutan
Royal Victoria Hospital, Belfast, UK

Objectives: Whilst smoking, diabetes mellitus and hypertension are known risk factors for cardiovascular disease, little is known about the effect these risk factors have on endothelial function of internal mammary arteries (IMA) and saphenous veins (SV). We assessed the extent of dysfunction that is inflicted on the endothelium by the 3 risk factors in these conduits.

Methods: Vascular samples were harvested during routine CABG. Rings 2–3 mm in length were mounted in organ-baths in physiological Krebs' solution. Following dose-response curves to norepinephrine, rings were pre-contracted to 80% of maximum response. Endothelium-dependent relaxant responses were then measured from this plateau of contraction with 10 different doses of acetylcholine.

Results: A total of 449 segments from 126 patients were studied (212 IMA, n=89; 237 SV, n=92). There were no differences in maximal relaxant responses between hypertensives and non-hypertensives, and no differences between diabetics and non-diabetics with either conduit (Table 1). In contrast, current smokers had reduced relaxant responses compared with ex- and non-smokers in IMA segments ($p<0.0001$), and current smokers had improved relaxant responses compared to ex- and non-smokers in SV segments ($p<0.0001$). (All comparisons using two-way repeated measures ANOVA with Bonferroni post-hoc testing.)

Conclusions: Hypertension and diabetes do not elicit impairment in endothelium-dependent relaxant responses of either conduit. However, current smokers display a reduction in endothelial function compared to ex- and non-smokers in IMA, whilst this is reversed with SV. With the IMA being the most important graft in most cases, smoking cessation is likely to be associated with increased graft patency, and hence, survival.

IMA	Risk factor positive	Risk factor negative	
Hypertension	50.2±2.3%	49.5±2.5%	p=ns
Diabetes	51.4±3.1%	49.2±2.0%	p=ns
Smoking	46.2±7.5%	50.7±1.8%	p<0.0001
SV			
Hypertension	26.3±1.8%	28.8±2.0%	p=ns
Diabetes	28.3±3.7%	26.6±1.3%	p=ns
Smoking	27.8±2.3%	21.5±2.4%	<0.0001

Table 1

The Association between Systemic Inflammation, Statin Therapy, & Saphenous Vein Endothelial Function in Patients u ndergoing Coronary Artery Bypass Surgery

A Momin[2]; A Shah[2]; R Sherwood[1]; J Desai[1]; A El-Gamel[2]; M Marrinan[1]; M Kearney[2]
[1]Cardiothoracic Department Kings College Hospital, London, UK; [2]Cardiovascular Division GKT School of Medicine, London, UK

Objectives: Systemic inflammation and endothelial dysfunction (ED) are independent predictors of future cardiovascular (CV) events. Statins, used to treat high cholesterol levels, improve ED, and reduce systemic inflammation. We investigated the association between C-reactive protein (CRP – a marker of systemic inflammation) and saphenous vein (SV) endothelial function in patients optimally treated with statins undergoing coronary artery bypass surgery.

Methods: 76 patients with optimal LDL cholesterol levels (<1.6 (SD 0.05) mmol/L) secondary to regular treatment with a minimum of simvastatin 40 mg were recruited. Endothelial function was assessed ex vivo in saphenous vein (SV) rings obtained at time of CABG.

Results: 26% of patients had CRP levels in the 'high risk range' (>3 mg/L) despite statin therapy. Acetylcholine (ACh) induced relaxation was assessed ex vivo in harvested SV rings. There was a negative linear correlation between ACh- induced SV relaxation and CRP ($r=-0.30$, $p=0.02$), and waist circumference ($r=-0.21$, $p=0.03$). In a multivariate regression model CRP ($p=0.02$) was the only independent predictor of ACh induced venous relaxation. In turn correlates of CRP were assessed. There was a correlation between CRP and angiographic estimates of coronary atherosclerotic burden (A-burden $r=0.46$, $p<0.0001$), BMI ($r=0.26$, $p=0.03$), glucose ($r=0.31$, $p=0.01$) and waist circumference ($r=0.29$, $p=0.01$). Using multivariate analysis coronary atherosclerotic burden ($p<0.0001$) was the only independent preidictor of CRP.

Conclusions: In patients with coronary artery disease, treated with statins to achive optimal LDL cholesterol levels, a sizeable proportion had CRP levels within the 'high risk' range. CRP was the only independent predictor of impaired saphenous vein endothelial function

Antithrombotic Therapy Following Bioprosthetic Aortic Valve Replacement: A Survey of UK Consultant Practice

J Nowell; E Wilson; M Jahangiri
St Georges Hospital, London, UK

Objectives: Antithrombotic therapy after isolated bioprosthetic AVR in patients with no other risk factors for thromboembolism remains controversial. Guidelines from American College of Cardiology and American Heart Association are mainly based on retrospective studies. There are only two prospective randomised studies in the literature. We have carried out a survey of UK consultant practice to establish antithrombotic methods following tissue AVR.

Methods: Postal survey of UK adult cardiothoracic surgery consultants was carried out. Format was a tick box chart regarding anticoagulation after tissue AVR. Respondents were asked to assume no concomitant procedures and that all patients remained in sinus rhythm.

Results: From 194 questionnaires, 171 responses were received (88%). Three responses were excluded (two respondents stated no valve surgery undertaken, another absent long term). The antithrombotic regimes employed are tabulated below:

Conclusions: There is great heterogeneity in antithrombotic regimes amongst UK consultant cardiac surgeons following isolated bioprosthetic AVR. The majority do not adhere to current AHA recommended guidelines. For an event rate of 2% per patient-year with a median follow up of 2 years and a risk ratio of 1.6, a sample size of 1797 patients is required for a clinical trial. We believe a randomised trial in various antithrombotic regimes is required.

Regime	Warfarin 3/12	Warfarin >3/12	Aspirin 3/12	Aspirin >3/12	No medication	Other regime
Number of respondents (precentage)	25 (15)	0 (0)	16 (10)	82 (48)	17 (10)	28 (17)

Vascular Media from Clonal Vascular Smooth Muscle Cells – A Model for Designing Vessels for Vascular Grafts

A Dhanji[1]; D Bishop-Bailey[1]; A Shipolini[2]; J Oligny[3]; L Germain[3]; T Warner[1]
[1]The William Harvey Research Institute Barts and the London Queen Mary University of London, London, UK; [2]Barts and The London NHS Trust Department of Cardiothoracic Surgery The London Chest Hospital, London, UK; [3]Hôpital du Saint Sacrement du CHA, Québec, Canada

Objectives: Poor long-term patency and the lack of suitable pharmacological therapy for the prevention of vein graft failure make the possibility of 'designer' bypass vessels attractive.
Here we have investigated using rat cells the possibility of selecting populations of vascular smooth muscle cells (VSMCs) to create vascular media.

Methods: Monoclonal populations of VSMCs were derived from WKY12–22 rat VSMC by dilute plating. Multiple populations were characterised for their morphological characteristics and responsiveness to the vascular mediator endothelin-1. Selected cells were then cultured in medium supplemented with 50 μg/mL of sodium ascorbate to stimulate extracellular matrix synthesis and the formation of thick cellular sheets. After 15-20 days the cell sheets were peeled off from the culture flask and wrapped around tubular supports producing cylinders of concentric layers. After further maturation the layers adhered to one another forming cohesive tubular tissues.

Results: Clonal cell population C7 was characterised as a fast growing, spindle-type cell, with responsiveness to endothelin-1 (Table 1). These characteristics permitted the production of tubular vascular tissues in culture.

Conclusions: These results demonstrate that single vascular smooth muscle cell populations can be identified with particular desired responsiveness or characteristics to produce vascular grafting media. After this proof of concept our further work is to develop techniques for genetic manipulation of monoclonal cell populations to explore the concept of producing 'designer vascular media'.

Outcomes of Internal Carotid Artery Stenting Performed Prior To Cardiac Surgery

D Tang[2]; M Randall[3]; T Cleveland[1]; P Gaines[1]; G Venables[3]; N Briffa[2]
[1]Sheffield Vascular Institute Sheffield Teaching Hospitals NHS Foundation Trust, Sheffield, UK; [2]South Yorkshire Cardiothoracic Centre Sheffield Teaching Hospitals NHS Foundation Trust, Sheffield, UK; [3]Department of Neurology Royal Hallamshire Hospital Sheffield Teaching Hospitals NHS Foundation Trust, Sheffield, UK

Objectives: The aim of this study is to examine morbidity and mortality associated with the use of carotid stenting performed in high risk patients prior to cardiac surgery.

Methods: A prospective cohort study of patients undergoing carotid artery stenting prior to cardiac surgery.

Results: Between April 1998 and July 2005, 52 out of 65 referred patients were deemed to have sufficiently severe carotid disease that was suitable for treatment by stenting. Median age of the patients was 67 (49–81) and the median euroscore was 5 (3–11). 50 patients required CABG and 2, AVR and CABG. Indications for intervention were symptoms referable to a carotid stenosis of 70% in 4, a carotid stenosis of 50% with a contralateral preocclusive 99% or occluded 100% in 20 and a combined stenosis of 150% with a 80% stenosis in the artery supplying the dominant hemisphere, in the rest.
All 52 patients tolerated the procedure with no early adverse outcomes. Within 30 days, prior to cardiac surgery, 1 patient died at home from cardiac causes. Two further deaths occurred 56 and 59 days after stenting prior to cardiac surgery. Seven further patients suffered CVA/MI/deaths within 30 days after cardiac surgery.

Conclusions: In this largest ever published series in high risk cardiac patients awaiting surgery, we have demonstrated that carotid stenting can be carried out with negligible early morbidity and results in post-operative outcomes comparable to staged or combined carotid/cardiac surgery. As with other carotid interventions in this group of patients, it highlights the need for a randomised controlled trial.

Lung Transplantation From Non Heart Beating Donors Without Pretreatment

A Butt; J Aitchison; J Wardle; S Clark; J Dark
Cardiothoracic Transplant Freeman Hospital, Newcastle upon Tyne, UK

Objectives: To increase the numbers of lung transplants, and possibly reduce effects of brain stem death, we commenced transplants from non-heart-beating donors (NHBD) in 2002. Previous work had suggested the inflated lung was resistant to ischaemia after death.

Methods: All donors died after elective withdrawal of treatment (Maastricht III) and no pre-treatment was permitted. Lungs were inflated after bronchial toilet and assessed at sternotomy. Thrombus, if present, was removed from PA, followed by antegrade and retrograde pulmoplegia. Implantation and postoperative management was as our standard protocol. Data was collected prospectively

Results: Since 2002, there were 6 recipients, 2 cystic fibrosis, 2 COPD and 2 fibrosing alveolitis, mean age 52, (range 38 to 64.4) Donors, mean age 29.6 years (range 15–47) died of cerebral trauma in 3, miscellaneous causes in 3. Mean time to asystole after withdrawal of treatment was 36 min (range 16–88). Mean inflated warm ischaemic time was 27 min (range 15–52); with mean total warm ischaemic time of 59 min (range 39–86). Total ischaemic time was 326 min (range 280–389). Early function was excellent in 5 patients. One died on 8th POD with primary graft failure, 1 died on 47th POD of colonic perforation but good early graft function and 1 died at 4 months related to non-compliance. Three surviving patients have excellent lung function and quality of life.

Conclusions: These excellent early results demonstrate the safety of NHBD lung transplantation in the absence of any donor pre-treatment. Simple inflation of lungs gives adequate protection against warm ischaemia for up to an hour.

Haemodynamic Evaluation & Early Outcome of Aortic Valve Replacement with Size 19 Perimount Prosthetic Valve.

A Dhanji[1]; D Bishop-Bailey[1]; A Shipolini[2]; J Oligny[3]; L Germain[3]; T Warner[1]
[1]The William Harvey Research Institute Barts and the London Queen Mary University of London, London, UK; [2]Barts and The London NHS Trust Department of Cardiothoracic Surgery The London Chest Hospital, London, UK; [3]Hôpital du Saint Sacrement du CHA, Québec, Canada

Objectives: To investigate the haemodynamic profile of the size 19 Perimount prosthetic valve using dobutamine stress test and to describe early outcomes of aortic valve replacement (AVR) with this valve in relation to patient prosthesis mismatch.

Methods: Patients (n=147, mean age=76.8±5.51, 31 women) who underwent AVR with a 19-mm Perimount valve prosthesis between December 1999 and January 2004 were identified from our database. Dobutamine stress testing was done on 24 patients (3 females). Peak and mean velocity and pressure drop across the prosthesis were measured and effective orifice area (EOAi) was calculated. Effective orifice area index (EOAI) of ≤0.85cmÇ/mÇ was investigated as a continuously varying covariate.

Results: Cardiac output (mean difference = 2.69 L/min, 95% CI=1.60–3.78, p<0.0001), PTG (mean difference = 31.1 mmHg, 95% CI=24.3–37.8, p<0.0001) and EOAIi (mean difference = 0.09 mm², 95% CI=0.01–0.13, p=0.03) increased significantly under stress. PTG under stress was strongly associated with PTG at rest (p<0.0001). In multiple regression models that adjusted for PTG at rest, only MAP at rest was additionally significantly associated with PTG under stress (p=0.02). Mean duration of follow up for the whole sample was 2.21 years, with 23 dying during follow up. Neither body surface area nor EOAI were significantly associated with survival.

Conclusions: The 19-mm Perimount aortic prosthesis exhibits acceptable haemodynamic performance. Transvalvular gradients remained within a clinically acceptable range, both at rest and at maximum stress. EOAI was not associated either with haemodynamic performance or survival, suggesting that patient–prosthesis mismatch is not a clinical problem with this prosthesis.

Magnetic Resonance Imaging & Surgical Left Ventricular Reshaping for Advanced Ischaemic Cardiomyopathy

C Rajakaruna; R Capoun; R Ascione
Bristol Heart Institute, Bristol, UK

Objectives: To investigate early and mid term outcome in a series of patients undergoing cardiac MRI guided surgical left ventricular reshaping (SLVR). To present magnetic resonance imaging (MRI) appearances of ventricular reshaping surgery.

Methods: Since 2003, 14 patients post large MI (11 male and 3 female, mean age 62 years [50–75 years]) underwent SLVR. Surgical aim is to reduce left ventricular end systolic volume (LVESV) and prevent further adverse ventricular remodelling. Indication for surgery is based on NYHA grading, raised LVESV and presence of major scar. Preoperative MRI assesses scar and ventricular volumes and directs optimal positioning of double purse string reshaping sutures. Early and late functional and clinical outcomes were assessed.

Results: Baseline New York Heart Association (NYHA) class was II in 12.5%, III in 25%, and IV in 62.5%. Median follow up was 18 months (range 1–28). Follow up MRI was available for 11 patients. LVESV decreased in 100%. LV ejection fraction increased in 83.3%. LV stroke volume decreased in 66.6%. NYHA class improved to I in 56.5% and II in 43.5%. Concomitant procedures included CABG in 93.7%, mitral valve repair in 25%, AF ablation in 12.5%, tricuspid annuloplasty and ICD insertion in 12.5%. Overall 2-year survival was 100%.

Conclusions: Cardiac MRI provides an accurate scar assessment allowing the surgeon to optimally plan LV reshaping, resulting in a highly effective therapy for ischaemic dilated cardiomyopathy.

Development of a Model to Predict Risk Of Blood Transfusion following Cardiac Surgery

L Culliford; G Murphy; C Rogers; G Angelini
Bristol Heart Institute, Bristol, UK

Objectives: To develop a predictive model to identify patients unlikely to require a blood transfusion during or after cardiac surgery, with the aim of targeting conservation strategies and allocating blood bank resources more efficiently.

Methods: Routinely collected data on 7772 adults who had received elective or urgent CABG and/or valve operations between April 1996 and December 2003 were analysed. Two thirds of the data, selected randomly, were used for model building ('training') and one third for model validation. Clinically plausible predictors and interactions were specified a priori. Predictors for the final model were selected by logistic regression and bootstrapping, and were used to calculate a score representing the risk of transfusion for each patient. Calibration was assessed by comparing the expected and observed number transfused. Discrimination was quantified by the c-statistic and likelihood ratios (LR) calculated for different cut-off scores, to assess the change in likelihood of requiring transfusion given a score above or below the cut-off.

Results: The final model contained gender, age, body mass index, serum creatinine, preoperative haemoglobin, ejection fraction, operation received, operative priority, previous thoracic surgery, IV heparin or nitrates, endocarditis and use of cardiopulmonary bypass. The c-statistic was 0.82. Calibration was good. A clinically useful negative LR (0.10) was obtained for a cut-off that had 24% specificity and 97.5% sensitivity, indicating patients below the criterion had odds of transfusion 10-fold lower than those above.

Conclusions: The model developed showed good discrimination and calibration. Future work will involve validation in datasets from other UK cardiac centres.

Prophylactic Inhaled Nitric Oxide for the Amelioration of Reperfusion Injury in Lung Transplantation

P Botha; M Jeyakantahan; J Rao; A Fisher; M Prabhu; J Dark; S Clark
Freeman Hospital, Newcastle upon Tyne, UK

Objectives: The prophylactic administration of inhaled nitric oxide (NO) during reperfusion after lung transplantation has been shown to reduce neutrophil-induced injury in animal models. Questions regarding efficacy in the clinical setting and concerns regarding increased free radical injury remain.

Methods: Twenty bilateral sequential lung transplant recipients were randomised to receive 20ppm inhaled NO (NO group) or standard anaesthetic gas mixture (Control group) from the onset of ventilation. Broncho-alveolar lavage was performed immediately prior to implantation and after 30 minutes of reperfusion and analysed for inflammatory cytokine levels and free radical surrogates. Primary graft dysfunction (PGD) scoring was performed prospectively for 72 hours post-transplant.

Results: The prophylactic administration of nitric oxide during the first 30 minutes of reperfusion had no statistically significant effect on the development of Grade II–III PGD (5/10 vs.7/10, p=0.36) or gas exchange (AUC 429±296 vs. 336±306, p=0.64) in the NO and Control groups respectively. Pulmonary neutrophil sequestration, as measured by the trans-pulmonary arterio-venous neutrophil difference, was not influenced by the administration of NO. Pre-implantation lavage IL8 concentration correlated non-significantly, (73.3 ng/mg urea 95% CI 13.3–1,218.3 vs. 30.1 ng/mg urea 95% CI 1.1–157.6, p=0.22) and post-reperfusion IL8 significantly, with the development of PGD (232.9 ng/mg urea 95% CI 8.1–806.5 vs. 9.3 ng/mg urea 95% CI 0.4–65.9, p=0.015) for those with-and without PGD respectively. Prophylactic NO did not significantly alter the up-regulation of IL8, myeloperoxidase, or nitrotyrosine during transplantation.

Conclusions: The findings of this study do not support the use of prophylactic inhaled nitric oxide in an attempt to prevent lung reperfusion injury.

Long-term Outcome in Cardiac Surgical Patients with Prolonged Intensive Care Stay

M Thompson; E Peng; E Cameron; W Walker
Royal Infirmary of Edinburgh, Edinburgh, UK

Objectives: Long-term survival following prolonged cardiac intensive care stay is largely unknown. This study determines 10-year survival following hospital discharge after cardiac ICU stay 7days.

Methods: 262 patients with prolonged intensive care stay were identified from 4972 patients over a 5-year period to produce Edinburgh Cardiac Surgical Score (ECScore) in 1995. ECScore calculates probability of in-hospital death following prolonged intensive care by taking into account the Parsonnet score, number and days of inotropes, length of ventilation, and presence of significant coagulaopathy. The cohort of 188 (72%) survivors was prospectively followed up in 2005 via GP, health board record and the General Register Office for Scotland.

Results: The actual probability of death was 84% in high risk patients with ECScore of 2 (Parsonnet score 20 requiring more than a single inotrope and mechanical ventilation 10 days and significant coagulopathy). For those who were discharged from hospital, Kaplan–Meier analysis showed an overall out of hospital survival of 70% at 5 years (133 alive) and 53% at 10 years (99 alive). After excluding non-cardiac causes of death, the survival at 5 years was 76% and at 10 years was 65%. The causes of death were cardiac in 44% (48 patients), malignancy in 8% (9 patients), CVA in 5% (5 patients) and other (or where causes unknown) in 43% (47 patients).

Conclusions: In patients with prolonged cardiac intensive care stay, long-term survival following hospital discharge appears encouraging over a 10-year period justifying the care provided. These factors should be considered in clinical decision making in the intensive care unit.

Surgical Council – A New Way of Dealing with the Highest Risk Cardiac Surgical Patients

A Barker; S Nashef
Papworth Hospital, Papworth Everard, Cambridge, UK

Objectives: To improve the surgical outcomes of the highest risk cardiac surgical patients by creating a separate patient subset treated by the consultant body as a group (the Council). This also removes the emphasis on individual surgeons' outcomes.

Methods: Council was established in June 2006. Inclusion criteria are patients who have been referred to our institution electively having previously been refused surgery by one or more centres, patients referred for transplant in whom a conventional operation is being contemplated and patients with a logistic EuroSCORE >25. Council takes corporate responsibility for assessment, surgery and outcomes. Operations are performed by two consultants chosen by the Council on the basis of the best skill mix required.

Results: In the 10 patients assessed to date, median age is 74 years (27–83 years) with a mean logistic EuroSCORE of 36.02 (range 12.01–58). One was not offered surgery (died), 2 await further investigations and 7 have been accepted: 1 died preoperatively, 2 await surgery and 4 have been operated, all of whom survived. There was 1 stroke and 2 prolonged hospital stays (median stay 79.50 days, range 28–90 days).

Conclusions: This approach may improve outcomes in two ways: High-risk patients are offered potentially life-saving surgery without impact on an individual surgeon's outcomes, and the team approach ensures thorough assessment and decision making with the optimal skill mix for the conduct of the operation. Early results are encouraging but the system requires further evaluation.

Impact of Audiotapes on Informed Consent in Cardiac Surgery: A Randomised Controlled Trial

P Mishra; H Mathias; K Miller; K Nagrajan; A Murday
Glasgow Royal Infirmary, Glasgow, UK

Objectives: We have used a previously published and validated questionnaire, which measures patients' level of knowledge within the domains described in the General Medical Council's informed consent guidelines, to evaluate the impact of audiotaping outpatient consultations on informed consent in cardiac surgery.

Methods: Patients attending outpatient clinic prior to coronary artery bypass grafting were recruited. We made audiotape recordings of outpatient consultations conducted by a single consultant surgeon with 84 patients. Patients were then randomised into three groups: group A (control) received no tape; group B (generic) received a copy of a tape containing general information about coronary artery bypass grafting; group C (consultation) received a recording of their consultation. Patients were interviewed on admission to hospital, shortly after giving consent. As well as the knowledge questionnaire, inventories assessing Multidimensional Health Locus of Control (MHLC) and Hospital Anxiety and Depression Scale (HADS) were administered.

Results: Values given in the table are mean±1 standard deviation. The differences in knowledge score between each of the groups reached statistical significance ($p<0.0001$ ANOVA). MHLC and HADS scores were not significantly different between control and generic groups but were significantly different between control and consultation groups ($p<0.05$, Student's t-test).

Conclusions: Providing an audiotape of the consultation before cardiac surgery dramatically improves patients' knowledge, reduces anxiety and increases patient independence.

Group		A	B	C
Knowledge score		13.8(5.4)	19.6(3.5)	32.0(5.9)
MHLC Score	Internality	14.0(3.7)	15.2(3.8)	21.2(4.6)
	Chance	16.4(3.9)	16.5(6.6)	12.0(4.4)
	Power of others	16.7(5.3)	15.8(5.2)	12.2(2.9)
HADS Score	Anxiety	2.6(1.8)	3.2(1.9)	1.6(1.6)
	Depression	2.4(1.6)	3.2(1.8)	1.5(1.5)

Mad, Bad or Delirious

D Quayle
Cardiothoracic Critical Care Unit, John Radcliffe Hospital, Oxford, UK

Delirium has created a number of problems for ICUs to deal with, from risk of harm to patients, to risk of harm to staff, to known risk of increased length of hospital stay and mortality. It remains, however, an under diagnosed and improperly treated disorder despite its implications. Delirium, when the patient becomes aggressive is instantly recognisable, and yet another hypokinetic form of the disorder is often confused with withdrawal or depression.

The author has identified an approach to the management of delirium by drawing together existing literature and pharmaceutical advice, based on an ethical framework identified by the British Association of Critical Care Nurses (BACCN) with regard to restraint. The process offers assessment and continuous evaluation through he use of the Richmond Agitation and Sedation Scale and the ICU – Confusion Assessment Method, in tandem with a planned and consistent approach to the treatment of delirium. This approach offers both appropriate sedation for hyperkinetic delirium and a treatment plan for hypo kinetic delirium, which would be applicable to any critical care setting.

Training In Congenital Heart Surgery

M Griselli[1]; D Barron[2]; W Brawn[2]; H Uemura[1]; D Shore[1]; B Sethia[1]
[1]Department of Cardiac Surgery Royal Brompton Hospital, London, UK; [2]Department of Cardiac Surgery Birmingham Childrens Hospital, Birmingham, UK

Objectives: To evaluate the effectiveness of structured training in Congenital Heart Surgery in the current Specialist Registrar (SpR) system.

Methods: During the past four years, 1 author (MG) has worked as Congenital Cardiac Surgery SpR in two Institutions, Birmingham's Children Hospital, and Royal Brompton Hospital.
The Consultant Surgeons in these Institutions have gradually moved away from a solely Consultant delivered service to offer a structured training system whereby trainees are involved in all aspects of the management of patients with congenital heart disease and enabled to perform increasingly complex operations as primary operator.

Results: Following this structured approach, the author has performed 268 congenital cardiac cases between the two institutions. Amongst these cases there were: 5 arterial switches, 22 tetralogy of Fallot, 10 complete atrio-ventricular septal defects, 25 partial atrio-ventricular septal defects, 30 cavo-pulmonary shunts, 22 total cavo-pulmonary connections, 40 ventricular septal defects, 26 coarctation of aorta repairs, 41 palliative procedures (modified Blalock–Taussig shunts, pulmonary banding, etc.) and amongst the grown-up population 23 pulmonary valve replacements. There were two deaths, one following completion of Fontan circulation and the other one following a Damus–Kaye procedure with cavo-pulmonary shunt. Two patients required re-operation for residual ventricular septal defects

Conclusions: Patients with congenital heart disease can be operated upon by SpRs undergoing structured training with an acceptable early outcome in most cases.

Weaning – Keep it Simple

D Quayle, P Hinchley
Cardiothoracic Critical Care Unit, John Radcliffe Hospital, Oxford, UK

Weaning, defined as 'the gradual reduction of ventilatory support and its replacement with spontaneous ventilation, tends to be a protracted process for a number of patients in ICUs, resulting in both increased trauma for patients and relatives and increased costs for the unit. A coordinated approach to weaning is therefore, of extreme importance. Current practice tends to involve anaesthetic/ surgeon lead approaches which, due to rostering, may lead to changes in approach on a day to day basis. It also tends to reduce the proactivity of nursing care where direction is sought rather than utilising the nurse's experience of their patients. These factors may lead to a considerable slowing of the weaning process. Furthermore, a number of studies have demonstrated the vital role that nurses can play in the weaning process, which tends to suggest that ICU's would be best served by a protocol based approach to weaning which has a significant nursing input.

Literature suggests that weaning from ventilation tends to be slowed by a numerous causal factors, which the authors have ascribed to one of three major categories:

- Respiratory mechanics
- Oxygen uptake
- Tissue perfusion

This approach, illustrated by case studies, attempts to offer a graphical representation within each of these categories using: (1) Rapid Shallow Breathing Index (RSBi) which is calculated by respiratory rate/tidal volume expressed in litres; (2) shunt chart demonstrating A/a gradient; and (3) metabolic status relating base excess to lactate.

Each graph seeks to identify areas in which weaning is likely to be progressed rapidly, where with caution and where it is likely not to succeed by colour coding areas of the graphs which relate to similarly coloured flow diagrams which suggest how to proceed with care.

Poor Blood Glucose Control Predicts in-Hospital Mortality & Morbidity in both Diabetic & Non-Diabetic Patients undergoing Cardiac Surgery

C Rajakaruna; C Rogers; R Capoun; G Angelini; R Ascione
Bristol Heart Institute, Bristol, UK

Objectives: Derangement of blood glucose metabolism after cardiac surgery is not specific to patients with diabetes mellitus (DM). The aim of this study was to investigate the effect of different degrees of disturbance in blood glucose control (BGC) on clinical outcomes after cardiac surgery

Methods: 8344 adult cardiac surgery patients operated on between April 1996 and Mar 2004 were analysed; 720 patients with <2 postoperative glucose measurements were excluded. The highest recorded blood glucose level in the first 60 hours after surgery was used to classify patients as having good (<11.1 mmol/L), moderate (>11.0 <13.9 mmol/L) or poor (13.9 mmol/L) BGC. Multiple logistic regression was used to quantify the association between BGC and DM and outcome.

Results: In total, 7117 patients (85%) had good, 876 (11%) moderate, and 351 (4%) poor BGC in the first 60 hours after surgery. 52% of patients with poor, 31% with moderate and 8% with good control had DM. Approximately 70% of patients in each group underwent CABG. Overall in-hospital mortality was 2.2% and varied significantly with BGC (good 1.6%, moderate 4.2%, poor 8.0%, $p<0.001$). BGC was found to be independently associated with in-hospital mortality, postoperative MI, and pulmonary complications (e.g. odds ratios (OR) good vs. poor 3.57, 2.75 and 1.52 respectively, $p\leq0.01$). In contrast, DM was not independently associated with any of these outcomes, but was associated with postoperative neurological complications and renal failure (OR for DM 1.44 and 1.47 respectively, $p\leq0.025$).

Conclusions: Over 50% of patients with moderate to poor BGC following cardiac surgery were non-diabetic. BGC is independently associated with in-hospital mortality and morbidity.

Pre-operative Diabetic Control & its Impact on Outcomes following Cardiac Surgery

A Coye; B Nyawo; A Roberts; A Owens
James Cook University Hospital, Middlesbrough, UK

Objectives: Diabetes mellitus is an important predictor of morbidity following cardiac surgery, however there is limited data on the importance of preoperative glycaemic control. We hypothesized that diabetic patients undergoing cardiac surgery with an elevated pre-operative glycosylated haemoglobin (HbA1C), would have a further increase in morbidity, as assessed by length of stay, respiratory, renal, neurological or infective complications and resource utilisation, when compared to those with normal HbA1C. We further evaluated the implications of an elevated body mass index in this group of patients.

Methods: Between November 2003 and July 2005, a total of 167 diabetic patients underwent non-emergency cardiac surgery in our unit. Demographic and peri-procedural data were registered prospectively in a computerised institutional database. Levels of HbA1C were measured prior to surgery. The association between HbA1C levels and in-hospital morbidity were then assessed. The association of an elevated HbA1C (>7%) and obesity (body mass index >30) was also determined after assessing each factor individually.

Results: The average patient age was 67±8.6 years. HbA1C was elevated in 107. There was a positive correlation between elevated HbA1c and post-operative renal impairment (p=0.032), and with increased resource utilisation (p=0.037). Elevated HbA1C and obesity, in combination, were associated with an increased length of stay (p=0.041), respiratory complications (p=0.028) and sternal wound complications (p=0.021).

Conclusions: Elevated HbA1C in isolation predicts for renal complications and increased resource utilization only. However, the combination of elevated HbA1C and obesity correlated with increased length of stay, respiratory and sternal complications.

A Pilot Randomised Controlled Trial of the Effect of Transfusion Threshold Reduction on Transfusion Rates & Morbidity after Cardiac Surgery

G Murphy[1]; S Rizvi[1]; F Battaglia[1]; L Culliford[1]; C Rogers[1]; A Cohen[2]; G Angelini[1]
[1]Bristol Heart Institute, Bristol, UK; [2]Department of Anaesthesia Bristol Royal Infirmary, Bristol, UK

Objectives: Transfusion decisions are often dictated by degree of post-operative anaemia acceptable to attending clinicians. Unnecessary transfusion increases costs and exposes patients to the risk of transfusion related morbidity. This pilot study aimed to assess the effect of reducing the haemoglobin transfusion threshold from 8g/dl (HT) to 7g/dL (LT).

Methods: Adult patients undergoing elective or urgent cardiac surgery were eligible. Randomisation to LT or HT was stratified by operation type and allocation concealed until patients entered ITU after surgery. All data were collected prospectively. Endpoints included red cell transfusion, systematic inflammatory response syndrome (SIRS) and a combination of MI, death or stroke (MIDS). The study was powered to detect a 20% difference in transfusion (40% vs. 20%, n=320).

Results: Between September 2005 and October 2006 321 patients were randomised (LT 162, HT 159). Patient characteristics were similar between the two groups (see table). 69 (21.4%) patients received red cells (LT 32; HT 37), with 17 transfusions outside the randomised allocation (LT 15, HT 2) for excessive bleeding or consultant preference for symptomatic patients. 178 patients had SIRS (LT 90, HT 88) and there were 17 MIDS (LT 10, HT 7). Odds ratios (HT vs. LT) were: transfusion 1.25 (95%CI 0.72–2.18, p=0.43); SIDS 0.97 (95%CI 0.62–1.52, p=0.91); and MIDS 0.72 (95%CI 0.26–1.94, p=0.51)

Conclusions: The transfusion rate in HT group was lower than anticipated and previously observed in our unit. Post-operative complication rates were similar between the two groups. A larger definitive study is needed to confirm the safety of the LT.

Haemoglobin threshold		7g/dL		8g/dL	
		n	%	n	%
Male		132	81.5	123	77.4
Operative priority:	Elective	132	81.5	127	80.4
Operation type:	CABG only	105	64.8	104	65.4
	valve only	32	19.8	28	17.6
Age (y)		67 (median)	60 to 74 (IQR)	66	58 to 73
Pre-operative Hb (g/dL)					
		13.8 (mean)	1.5 (SD)	13.8	1.6

Patient characteristics and operative details

Cell Salvage & Autotransfusion Does Not Increase Post-operative Bleeding – A Randomised Controlled Study

A Klein; E Lin; S Nashef; J Armstrong; B Fiona; A Vuylsteke
Papworth Hospital, Cambridge, UK

Objectives: Perioperative cell salvage in cardiac surgery is relatively well established, but its use is often limited to complex cases or multiple procedures. Concerns remain regarding coagulopathy and excessive bleeding, especially when large volumes of blood are processed. The safety of cell salvage was addressed in a randomised controlled trial.

Methods: The study was approved by the local ethical committee and informed written consent was provided. We studied 100 patients randomised to routine peri-operative cell salvage or controls. Outcome measures were post-operative blood loss, platelet count and coagulation profile. All patients presenting for first time non-emergency cardiac surgery with cardiopulmonary bypass (CPB) were eligible. In the treatment group, blood collected by suction pre-and post-CPB and remaining blood in the CPB circuit was processed by continuous cell salvage (CATS, Fresenius) and auto-transfused. Cell salvage continued for 6 hours post-operatively. In the control group, suctioned blood was discarded and remaining blood in the CPB circuit transfused directly, as per standard practice. In all patients, shed mediastinal blood during CPB was returned directly to the reservoir.

Results: Demographic data including EuroSCORE were similar in both treatment (n=51) and control (n=49) groups. The treatment group had a greater number of combined procedures (9 vs. 2). There was no significant difference in blood loss, platelet count or coagulation parameters (Table 1).

Conclusions: Per-operative cell salvage and autotransfusion of all blood including remaining CPB volume does not cause coagulopathy or thrombocytopenia, despite washing and re-suspension of red blood cells in saline. There is also no increased bleeding post-operatively.

	Control	Cell saver	p value
6 hour blood loss (IQR)	174 (165)	175 (113)	0.655
total blood loss (IQR)	427 (300)	375 (281)	0.159
platelets 1 hour post-op (SD)	134.5 (53.2)	162.3 (55.0)	0.026
platelets 24 hours post-op (SD)	161.3 (55.0)	176.5 (56.1)	0.876
prothrombin time 1 hour post-op (SD)	17.9 (0.4)	16.9 (0.4)	0.536
prothrombin time 24 hours post-op (SD)	15.6 (0.4)	15.8 (0.5)	0.916
partial thromboplastin time 1 hour post-op (SD)	34.8 (0.4)	32.0 (0.4)	0.732
partial thromboplastin time 24 hours post-op (SD)	30.9 (0.4)	30.5 (0.5)	0.970

Table 1 IQR = inter-quartile range SD = standard deviation

Sleeve Resection Vs. Pneumonectomy For NSSLC: Comparative Analysis And Outcomes

H Parissis[1]; M Leotsinidis[2]; E Mc Govern[1]; V Young[1]
[1]St James Hospital, Dublin, Ireland; [2]University of Patras, Patras, Greece

Objectives: The purpose was to compare the early and late outcome of sleeve lobectomy versus pneumonectomy for lung cancer in a single unit.

Methods: Between 1998 and 2006, 664 lung resections were carried out. There were 129 pneumonectomies (19.4%) and 79 sleeve resections (11.9%).

Median age was 63 years (mean 61.2, range 14–81).

Post-op pathological stage was revealed 27.5% of the patients to be at stage I–IIa, 25.5% to be IIb and 47.3% III.

Peri-operative mortality and 5 year survival was compared on the respective procedures.

Results: The operative mortality for the sleeves was 1.3% (1/79) versus 11.6% (15/129) for pneumonectomies.

Overall 5-year survival after sleeve was 41.8% while for pneumonectomies was 37.1%.

The distribution of 5-year survival stage by stage in either group is depicted.

Univariate and multivariate analysis of risk factors affecting survival after surgery revealed: male sex hazard ratio (HR) 1.19, 0.63–2.27 (95% CI), Age> 63 1.38(HR), 0.78–2.48 (95% CI), Pneumonectomy 1.78 (HR), 0.92–3.46 (95% CI) and stage III 4.44 (HR), 1.94–10.16 (95% CI).

The survival curves for the two operating procedures after adjusting for the risk factors is presented. It is concluded that the area under the curve is higher for the sleeves 1.78 (HR), 0.92–3.46 (95% CI).

Conclusions: For comparative stages, immediate and long-term survival appears better after sleeve resection moreover, sleeve lobectomy, age younger than 63 years and stage I and II are positive prognostic factors for long-term survival.

Equivalent Early Results with Endovascular Stenting versus Open Repair of Traumatic Aortic Rupture

E Akowuah; G Angelini; A Baumbach; P Wilde; A Bryan
Bristol Heart Institute University of Bristol and Bristol Royal Infirmary, Bristol, UK

Objectives: To evaluate early results of endovascular stenting (ES) of traumatic aortic rupture (TAR).

Methods: A retrospective review of consecutive cases of TAR in a single institution from July 2000 to July 2006.

Results: Fifteen cases were identified. The mean injury severity score was 43 (10). Fourteen patients had the procedure within 24 hours of admission to hospital. Seven patients underwent ES and 8 underwent open repair (OR).

For ES, there were no failed procedures, no perioperative complications and no perioperative deaths. In 6 cases, there was no evidence of endoleak, stent migration or late pseudoaneurysm formation. One patient required a second stent 2 years later to treat a stenosis in the original stent. For OR, CPB was used in 7 of the 8 cases. One patient developed lower limb paraplegia postoperatively and 1 patient died from head injuries.

There was a significant reduction in the mean duration of the procedure [2.2 (0.90) versus 5 (3.2) hours, p= 0.04), the mean intraoperative blood loss, (311 (20) versus 953 (20) mL, p=0.02), the mean number of units of blood and blood products used (0.43 (1.1) versus 3 (3) units, p=0.026) and the mean dose of heparin required (5000 (1700) versus 24 000 (7500), p=0.001) in the ES group. There was no difference in duration of ventilation, ITU or hospital stay.

Conclusions: ES was technically feasible and applicable to a range of patients. It takes less time, requires less heparin and blood products and therefore simplifies management of other injuries. In haemodynamically stable patients ES is the treatment of choice for TAR.

Pattern Of Thoracic Injuries Sustained By Military Personnel In Iraq And Afghanistan

P Nanjaiah; C Ng; S Rooney; T Graham
University Hospitals Birmingham NHS Trust, Birmingham, UK

Objectives: Advanced weaponry and sophisticated protective body armours used in high intensity combat in Iraq and Afghanistan have changed the pattern of thoracic injuries sustained by military personnel during modern warfare.We sought to analyse this change.

Methods: We reviewed retrospectively the medical records and computed tomography scans of nine servicemen who were transferred back to University Hospitals, Birmingham, between July and October 2006 for further management of thoracic and other injuries sustained by mine/mortar blasts during combat.

Results: The mean age of the soldiers was 28 years (SD 2.54). 5 (55.5%) were intubated upon arrival, and 2 subsequently required intubation. Seven sustained blast injuries, 5 of them developed pneumothorax (4 unilateral, 1 bilateral), requiring intercostal chest drain (ICD) insertion. Three had additional shrapnel injuries to the chest (2 intrathoracic, 1 extrathoracic). The shrapnel entry points on the chest wall were; 5 lateral and 1 antero-lateral. The median initial ICD output was 370 mL (range 70–920).The average total ICD output was 1123.3 mL (range 75–3555) Infective complications included, 3 wound infections, 1 lung abscess and 5 chest infections. Three soldiers had formal chest wall wound debridement, and none required intrathoracic surgical intervention. There were no mortalities, and the mean hospital stay was 34 days.

Conclusions: The modern military body armour can be a valuable asset in reducing mortality from thoracic blast injuries. The less protected side areas of the armour may expose soldiers to lateral thoracic shrapnel injuries. In our experience, conservative management even for intrathoracic involvement resulted in acceptable outcomes. A larger study would be able to provide more insight into future development of better and safer body armour.

The Prognostic Importance of Trauma Scoring Systems for Blunt Thoracic Trauma

M Sezer; H Esme; O Solak; Y Yurumez; Y Yavuz; Y Terzi; H Kucuker
Afyon Kocatepe University, Afyon, Turkey

Objectives: The aim of this study was to evaluate the independent predictive value of 5 different trauma scoring systems (Revised Trauma Score (RTS), Trauma and Injury Severity Score (TRISS), Injury Severity Score (ISS), Lung Injury Scale (LIS), and Chest Wall Injury Scale (CWIS)) for prognostic factors such as tube thoracostomy duration, need for mechanical support and thoracotomy, length of hospital and intensive care unit stay, morbid conditions, and deaths in patients with blunt thoracic trauma.

Methods: The records of 152 patients with blunt thoracic trauma were reviewed and data consisting patients' age and gender, blood pressure and respiratory rate on admission, extent of chest wall and intrathoracic injury, types of associated injuries, Glasgow Coma Scale (GCS) scores, the need for mechanical support and thoracotomy, tube thoracostomy duration, length of hospital and intensive care unit stay, morbid conditions, and deaths were collected. The relationship between the trauma scoring systems and prognostic factors were evaluated with multivariate analyses.

Results: The analysis showed that only TRISS was an independent predictor of mortality and only LIS was an independent predictor of morbidity, need for thoracotomy, and tube thoracostomy duration. TRISS and LIS were independent predictors of length of intensive care unit stay. ISS, CWIS, and LIS were independent predictors of need for mechanical support. RTS, TRISS, ISS and LIS were independent predictors of length of hospital stay.

Conclusions: The LIS grade appeared to correlate with severity of blunt thoracic injury and was found to be the most useful scoring system in predicting the outcomes of these patients.

Peri-operative Patient Warming: A Randomised Controlled Trial Comparing Mediwrap Blanket & the Bair Huggers in Thoracic Surgical Procedures

S Rathinam; V Annam; R Steyn; G Raghuraman
Birmingham Heartlands Hospital, Birmingham, UK

Objectives: Perioperative hypothermia is associated with an increased morbidity. The current methods of maintaining normothermia are by actively warming them during the operation with Bair Hugger and using passive heat retention blankets.
We studied the effectiveness of Mediwrap blankets (M) and Bair Huggers (BH) in maintaining perioperative normothermia during major thoracic surgical procedures.

Methods: We performed a prospective randomised control trial comparing the two modes of maintaining normothermia (M and BH) with the approval of COREC and R&D.
Thirty patients were recruited after obtaining informed consent and were randomised in to the two group M (n=16) and BH (n=14) between January 2005 to September 2006.
The care was standard in both groups except the choice of warming device and core and peripheral temperatures were monitored every 30 minutes upto 6 hours after the procedure.
The variation in temperatures were analysed with a unpaired t test with a p value of 0.05 was accepted as significant using a Graphpad satistical software.

Results: There were 22 males(73%) with a median age of 68 years (range 47–83 years).There was no difference in the types of procedure or duration of procedure between the two groups (M:145.7±13.42 min and BH:140.4±16.79 min p:0.81). There was no difference in the core temperature at the end of the operation between the two groups (M:36.23±0.16 and BH:36.01±0.22 p:0.42).
There was one mortality in the mediwrap group due to surgical haemorrhage. Two patients in each group needed Bair Hugger restarted in recovery for hypothermia. The core temperature variations between the two groups is listed in Table 1.

Conclusions: Mediwrap blankets are as effective as Bair Huggers in maintaining intra-operative normothermia in thoracic surgical procedures. Mediwrap blankets decreased the incidence and impact of transient postoperative hypothermia.

	Pre op	End of Surgery	2hrs	4hrs	6hrs	Time to normothermia
Mediwrap	36.75±0.07	36.23±0.16	36.79±0.21	37.02±0.16	37.15±0.20	66.43±17.84 min
Bair Hugger	36.76±0.12	36.01±0.23	35.71±0.22	36.64±0.14	36.89±0.15	161.8±28.92
p value	0.91	0.42	0.001	0.12	0.32	0.009

Table 1

There is No Such Thing as a Good Anaesthetist!

S Nashef; J Ferguson; S Wilkinson; J Arrowsmith; L Sharples
Papworth Hospital, Papworth Everard, UK

Objectives: Risk-adjusted mortality for cardiac surgery is affected by which surgeon performs the operation, but the impact of the anaesthetist is unknown. This study aims to quantify the variation in risk-adjusted mortality between cardiac anaesthetists.

Methods: Prospective data on 10,264 consecutive adult cardiac surgical patients from a single institution were analysed. Predicted mortality (by logistic EuroSCORE) and actual hospital mortality were recorded for individual surgeons and anaesthetists. Variation was assessed by (1) a classic test of heterogeneity based on a fixed effects logistic regression model and (2) a comparison of the deviance information criterion (DIC) for a model including anaesthetists with a model excluding anaesthetists.

Results: Data were 100% complete. There was no evidence of variation among anaesthetists (classic test of heterogeneity: change in deviance = 0.4, [p>0.999]. There was no real difference between the model including both anaesthetist + surgeon (DIC=3008) and the model including surgeon only (DIC=3006). DIC did not change on examining the interaction between surgeons and anaesthetists; therefore there is no evidence of a combined effect of anaesthetists and surgeons, over and above the effect of the surgeon alone. In the best-fit model, only logistic EuroSCORE and surgeon had a significant impact on outcome, confirming that there is significant variation amongst surgeons in risk-adjusted mortality.

Conclusions: In our institution, there is no such thing as a good anaesthetist and there is no such thing as a bad anaesthetist, but there are good surgeons (and better surgeons).

A Meta-analysis of Aspirin 'Resistance' & Clinical Outcome

G Krasopoulos[1]; S Brister[1]; S Beattie[1]; M Buchanan[2]
[1]Toronto General Hospital, Toronto, Canada; [2]McMaster University Health Sciences Centre, Hamilton, Canada

Objectives: The debate about aspirin 'resistance' and its impact on clinical outcome continues. We performed a meta-analysis of available studies that compared clinical outcomes in aspirin 'resistant' and 'sensitive' patients with cardiovascular disease.

Methods: A comprehensive electronic literature search, without language restriction, of the available databases identified 319 abstracts, of which the text of 51 studies was read by all investigators. The bibliographies were hand-searched for relevant articles. Inclusion criteria included a test for platelet responsiveness and clinical outcomes. Disagreements about inclusion were resolved by consensus. The data were analysed, using RevMan (V4.2.8) software (Cochrane Collaboration). We calculated the odds ratio, 95 % CI, using the random effects model. Aspirin 'resistance' was assessed, using various platelet function assays.

Results: The search identified 19 relevant studies including 2696 patients with cardiovascular disease. Most studies used aspirin regimes ranging from 75–325 mg daily, and 6 studies included adjunct antiplatelet therapy. Twenty-eight percent of patients were classified as aspirin 'resistant'. Forty-one percent of these suffered: (i) any cardiovascular-related event, OR 4.10, 95 % CI 3.25–5.17, $p<0.00001$; (ii) mortality; 5.7 %, OR 5.99, 95 % CI 2.28–15.72, $p<0.0003$; and (iii) acute coronary syndrome; 39.4 %, OR 4.06, 95 % CI 2.96–5.56, $p<0.00001$. There was no aspirin dose-related effect ($r=0.2306$). Moreover, aspirin 'resistant' patients did not benefit from additional plavix treatment.

Conclusions: This evidence indicates that aspirin 'resistant' patients are at a greater risk of clinically important cardiovascular morbidity in long-term follow up.

Are Current UK Waiting Time Targets in Lung Cancer Treatment Achievable? Result of a Prospective Study

M Devbhandari; P Quennell; P Krysiak; R Shah; P Barber; M Jones
Wythenshawe Hospital, Manchester, UK

Objectives: Delays in presentation, diagnosis and treatments of lung cancer patients continue to raise a cause for concern. Recent guidelines [1–3] have specified a number of waiting time targets to prevent this delay. This study was carried out to compare our waiting times with national recommendations.

Methods: All newly diagnosed cases of lung cancer presenting to our institution as primary referrals were entered into a prospective tracking study. From September 2003 to December 2005 a total of 342 patients were entered into the study. Of these 193 (56%) were referred by general practitioners (GP) and remainder 149 (44%) were A&E and internal referrals. The National Health Service waiting time targets are mainly applicable to GP referrals, which formed the study group. A dedicated audit officer tracked patient journeys through the treatment pathway. The time intervals were calculated for the specified periods and expressed as median days (inter quartile range IQR).

Results: As shown in Table 1.
1 British Thoracic Society Guideline
2 National Cancer Plan 2000
3 Joint Council for Clinical Radiology Guideline

Conclusions: This data demonstrates that current waiting time targets are still not being achieved in all areas. The majority of patients receive out patient consultation in the recommended time period. Subsequently, however there is an excessive wait for the commencement of all three treatment modalities. A concerted effort by all clinicians is required to meet the prescribed target times.

Variable	Target times	Median days	IQR days	Mean days
1 GP referral receipt to chest out-patient	14 days	1	0–5	3.8
2 GP referral to treatment	62 days	66	44–85	75.5
1 Oncology referral to chemotherapy	7 days	16.5	11–25	21
1 Waiting on surgical waiting list	28 days	25	11–32	24.3
3 Oncology referral to radiotherapy	28 days	43	16–48	41.5

Table 1 Waiting times

Comparative Analysis of Aortic Valve Replacement & Composite Aortic Valve Graft Replacement: Mortality Outcomes in a National Registry

M Kalkat[1]; M Benedicta[2]; K Taylor[2]; R Bonser[1]
[1]University Hospital Birmingham NHS trust, Birmingham, UK; [2]Hammersmith Hospital, London, UK

Objectives: Composite aortic valve and root replacement (CVG) is a more complex procedure than isolated aortic replacement (AVR) but comparative outcomes have not been reported.

Methods: The United Kingdom Heart Valve Registry was interrogated for first-time AVR and CVG procedures from 1986 to 2005. We considered 30-day mortality and long-term survival (98% complete follow-up) in the two groups of patients and examined potential risk factors using univariate and multiple logistic regression analysis.

Results: Of 80,791 total AVR/CVG patients, there were 37,102 first-time mechanical AVR and 1,962 CVG undertaken during the study period. AVR patients were older (58.93±11.72 versus 53.94±4.11 years p <0.001). The average AVR valve size was 23.40±2.67 versus 26.68±2.48 for CVG (p<0.001). Thirty-day mortality was 4.5% and 10.4% for AVR and CVG respectively (p<0.001). CVG procedure was an independent risk factor for early mortality. (OR 2.68, CI 2.27–3.16). In group, multivariate analysis identified age >70 years, impaired ventricular function, concurrent CABG and non-elective procedure as significant factors for 30-day mortality for both procedures. In the CVG group, small conduit size (valve size ≤23mm) [OR 1.97, CI 1.40–2.78] and low hospital volume (<8 procedures per annum) [OR 1.53, CI 1.11–2.1] were also significant. The conditional post-30-day long-term survival was similar with approximately 80% patients surviving at 10 years.

Conclusions: These data provide a unique national insight into comparative outcomes of AVR and CVG. CVG is a higher risk procedure but has equivalent and highly satisfactory conditional long-term survival. Efforts should be directed at reducing early CVG mortality.

Management of Prosthetic Graft Infection after Surgery of the Thoracic Aorta

E Akowuah; P Narayan; G Angelini; A Bryan
Bristol Heart Institute University of Bristol and Bristol Royal Infirmary, Bristol, UK

Objectives: To define outcome and management strategies for prosthetic graft infection (PGI) after surgery of the thoracic aorta.

Methods: From 1996 till 2005 patients undergoing prosthetic graft replacement of the thoracic aorta were prospectively placed on a database. A retrospective review of case notes was performed.

Results: Four hundred consecutive patients underwent graft replacement of the thoracic aorta. The mortality for the entire cohort was 13%. 8 patients (2%) suffered PGI (aortic arch replacement (2), composite aortic root replacement (3), and interposition graft to the ascending aorta plus AVR (3)).The mean age was 63(15). Six were elective cases and 2 urgent.
In 6 patients, PGI was associated with sternal wound sepsis. Two patients had infection of aortic graft prosthesis without sternal wound involvement. Six patients underwent aggressive surgical treatment. Five patients with sternal wound sepsis underwent surgical drainage, mediastinal irrigation and sternal reconstruction. All survived. One patient with an isolated graft infection underwent successful re-operation with replacement of the infected conduit. Two patients, one with sternal wound sepsis and another with an isolated graft infection were treated conservatively. Both died.
Median ITU stay was 8 (range 3–74) days. Median survival for the 6 patients discharged from hospital was 5.8 years (range 0.25–7 years). There was 1 late death 6 years after the procedure. No patient had recurrence of sepsis affecting either the wound or the aortic prosthesis.

Conclusions: The incidence of PGI after surgery of the thoracic aorta is low, 2% and is mostly related to sternal wound sepsis. Aggressive surgical management is recommended.

Heart Surgery in Nonagenarians: Is It justified?

A Drain; J Ferguson; A Kakar; J Kitkat; S Nashef; S Large
Papworth Hospital, Cambridge, UK

Objectives: To assess the outcome of cardiac surgery in nonagenarians.

Methods: Preoperative, operative and immediate postoperative data were prospectively collected on all nonagenarians undergoing cardiac surgery at our institution between 1999 and 2006. The status of survivors was assessed by telephone survey.

Results: Seventeen patients had cardiac surgery over the age of 90. Preoperative symptoms were severe (median CCS 3, median NYHA III). The mean logistic EuroSCORE was 15 [11–61]. The most commonly performed operation was combined aortic valve replacement (AVR) and coronary artery bypass grafting (CABG) in 10 patients, followed by isolated AVR (4) and CABG (3).

Mean intensive care unit (ICU) stay was 2 days (median 3), with a mean hospital stay of 24 days (median 19). Hospital survival was 88% (2 deaths: one VF arrest day 1 and one death secondary to ischaemic bowel day 5). There were 3 late deaths at 8, 15 and 29 months. At a mean follow-up of 36 months [range 8–104] all survivors reported improved symptoms (NYHA class I or II) and were free of angina (CCS class 0).

Conclusions: Cardiac surgery in selected nonagenarians is associated with longer hospital stay, has acceptable results and can be justified for symptomatic improvement.

Endoscopic Vein Harvesting in Patients at High Risk of Leg-wound Complications

M Simek; P Nemec; V Bruk; P Marcián; R Hajek; K Langova
Department of Cardiac Surgery University Hospital and Palacky University Faculty of Medicine, Olomouc, Czech Republic

Objectives: This study sought to determine whether outcomes of endoscopic vein harvest are independent on the presence of risk factors for leg-wound complications.

Methods: From June 2005 to September 2006, endoscopic vein harvest (EVH) for CABG was performed in 160 consecutive patients. Based on the presence of the risk factors (obesity, diabetes, female gender, peripheral vascular disease) the patients were divided in the group A (n=110, at least one risk factor) and the group B (n=50, no risk factor). Patients were evaluated prospectively for wound-healing complications, residual leg oedema, pain and saphenous neuropathy on 7th post-operative day and after 3 months.

Results: On 7th post-operative day were no differences in terms of leg-wound complications: haematoma (28% vs. 30%, p=0.83), necrosis (0% vs. 0%), lymphatic discharge (1% vs. 2%, p=0.53), infection (0% vs. 0%) and dehiscence (0% vs. 0%, p=0.51). No differences were found in residual oedema (11 vs. 10%, p=0.82), pain (12% vs. 14% p=0.72) nor saphenous neuropathy (4% vs. 4%, p=0.93). At the 3-month follow-up, identically, decreased incidence of residual leg oedema (6% vs. 6%, p=0.98), pain (5% vs. 6%, p=0.83) and saphenous neuropathy (3% vs. 2%, p=0.82) was identified. No significant differences were recorded in harvesting characterics: mean harvesting time (43.7±10.2 vs. 44.4±10.6 min, p=0.67), mean graft length (32.9±9.7 vs. 35.4±10.1 cm, p=0.06) and conversion rate (1% vs. 2%, p=0.76).

Conclusions: Outcomes of EVH are not dependent on the presentation of risk factors. EVH should become the standard of care in patients at high risk of leg-wound complications.

The Risk Factors of Post-traumatic Empyema in Patients with Tube Thoracostomy

S Eren[1]; H Esme[2]; A Sehitogullar›[3]; F Geyik[1]; M Eren[1]
[1]Dicle University School of Medicine, Afyon, Turkey; [2]Afyon Kocatepe University School of Medicine, Afyon, Turkey, [3]General Hospital, Van, Turkey

Objectives: The aim of this study was to identify the risk factors for post-traumatic empyema and to review our treatment methods and outcomes in patients with tube thoracostomy.

Methods: A total of 2261 patients who admitted with thoracic traumas and were performed tube thoracostomy between January 1989 and January 2005 were investigated retrospectively. Univariate and multivariate logistic regression analyses were used to assess the association between potential risk factors and post-traumatic empyema.

Results: Eight hundred and thirty-six (37%) of the patients were of penetrating type, while 1425 (63%) were of blunt type trauma. The rate of post-traumatic empyema development was 3.1% (n=71) for all patients. Pulmonary contusion was seen in 221 (9.8%) patients and more than two rib fractures were seen in 191 (8.4%) patients. Tube thoracostomy placement was performed in the emergency room in 1728 (76.4%) patients, in the hospital ward in 197 (8.7%), in the intensive care unit in 182 (8.0%), and in the operating room in 154 (6.8%). The duration of tube was 2.99 (1–21) days. Retained haemothorax was seen in 175±6.11 (7.7%) thoracostomy patients. The mean lengths of hospital and intensive care unit stay were 2.66.±3.45 (0–18) and 2.36 ±6.42 (4–52) days respectively.

Conclusions: We determined that prolonged duration of tube thoracostomy and length of intensive care unit stay, presence of contusion, laparotomy and retained haemothorax were independent predictors of post-traumatic empyema. Use of presumptive antibiotics may be recommended to the patients with these risk factors.

Post-operative Pleural Fluid Culture: When is it Worthwhile?

J Phadnis; J Pilling; P Goldstraw; G Ladas; M Dusmet
Royal Brompton Hospital, London, UK

Objectives: To assess the utility of pleural fluid culture in managing post-operative thoracic surgical patients.

Methods: Review of 688 consecutive patients undergoing thoracic surgery over 18 months. Seventy-five patients [41 male, median age 58 years (range 15–75)] had 150 post-operative pleural fluid samples sent for microscopy and microbiological culture. The median number of samples per patient was 2 (range 1–11) sent a median 7 days (range 1–48) post-operatively. Fifty-six patients were treated for malignancy. Thirty-eight patients underwent pulmonary resection, 32 pleural and five mediastinal surgery. Factors associated with positive fluid culture were analysed.

Results: Identifying organisms on microscopy had a sensitivity of 43% and specificity of 99%. Univarate analysis: Samples sent post-operative day 7 (p=0.001), rising white cell count (WCC) (p<0.001), pulmonary resection (p=0.016), leucocytosis (p=0.003) and raised C-reactive protein (CRP) (p=0.019) were associated with positive cultures. Multivariate analysis: Post-operative day <7 (p= 0.002) and rising WCC (p= 0.001) maintained significance. Broad spectrum antibiotic treatment showed a trend towards reducing the proportion of patients with positive cultures [23 of 86 (27%) vs. 26 of 54 (48%) (p=0.07)]. Patient treatment was altered on the basis of one-third of samples. No patient required surgery for, or drainage of, empyema.

Conclusions: It is worthwhile culturing chest drain fluid of patients whose WCC is rising and whose drains have been in situ for 7 days, even if receiving antibiotics. Negative microscopy should be treated with skepticism. This strategy could help avoid post-operative pleural empyema.

		Incidence positive culture	p
Post-operative days	<7	29 of 59 (49%	0.001
	<7	20 of 91 (22%)	
WCC trend	Rising	23 of 40 (58%)	<0.001
	Not rising	26 of 109 (24%)	
Pulmonary resection	Yes	34 of 83 (41%)	0.016
	No	15 of 67 (22%)	

Resection of Pulmonary Secondaries in Colorectal Cancer: Does Previous Hepatic Metastatectomy Impact On Survival

H Kaukuntla; D Mittapalli; M Jones
South Manchester University Hospitals NHS Trust, Manchester, UK

Objectives: Pulmonary metastatectomy for secondaries from colorectal carcinoma is now an established procedure. When multiple organs are involved, surgery is generally not recommended. However, when liver and lungs are the only organs involved, long-term survival following metastatectomy has been reported. We investigated whether there was any difference in survival following resection of pulmonary lesions in patients who had previous hepatic metastatectomy and those who did not have any previous hepatic involvement.

Methods: We analysed retrospectively the data from 35 patients who underwent resection of pulmonary secondaries from colorectal cancer between January 2000 and October 2005. Twenty-two patients had previous resection of hepatic secondaries and 13 patients had no previous hepatic secondaries.

Results: There was no local recurrence and all patients had complete resection. There were no peri-operative deaths. There was no difference in the mean age of the patients in the 2 groups: 61.45 years (SD 5.52) (range: 49–71) vs. 65.46 years (SD 9.9) (range 43–78) years (p=0.28). The number of pulmonary lesions removed ranged between 1 and 4. For the group who had previous hepatic resections, the mean survival was 43.7 months (SE 5.46) (range: 33–54). For the 13 patients who had only pulmonary lesions, mean survival was 36.05 months (SE 3.52) (range 29.1–42.9). The difference in survival was not significant (p=0.58).

Conclusions: In patients undergoing resection of pulmonary secondaries from colorectal carcinoma, a previous history of complete hepatic secondary resection does not adversely impact on the long-term survival.

Video-assisted Thoracoscopic Maze for Atrial Fibrillation: The Future is Less Invasive

V Avlonitis; S Murray; S Hunter
James Cook University Hospital, Middlesbrough, UK

Objectives: The video-assisted thoracoscopic (VAT) maze is a new technique for treatment of atrial fibrillation (AF). We reviewed our experience.

Methods: From 09/2003–08/2006, 40 symptomatic lone-AF patients were scheduled for VAT microwave maze. Data were collected prospectively.

Results: One patient was cancelled for anaesthetic problems, 31 had VAT (26 complete maze, 5 abandoned), 8 converted to sternotomy intraoperatively (75% of conversions occurred during first half of cohort). Of 26 complete VAT procedures, 14 had paroxysmal AF, 8 persistent, 4 permanent. Of the paroxysmals, 10 (71.4%) were cured (4 after additional catheter ablation for postoperative cavotricuspid-isthmus-dependent right atrial flutter [CTIRAF]). In 3, AF recurred: 2 had additional catheter pulmonary vein isolation (CPVI), successful in 1; the third opted for atrioventricular node ablation. One was lost to follow up. Of the persistents, 6 (75%) were cured (1 after additional CTIRAF ablation). In 1, AF recurred and 1 was lost to follow-up. Of the permanents, 1 was cured after CTIRAF ablation and 1 after CPVI. One had postoperative flutter and is awaiting cardioversion. One remains in AF. All AF recurrences had 60 seconds ablation during maze. Ablation increased to 120 seconds and results are awaited. Median hospital stay was 4 days. In-hospital mortality was 0%.

Conclusions: VAT maze is a promising minimally invasive procedure for AF. Postoperative CTIRAF can be easily treated with catheter ablation. With this approach, 71–75% of patients with paroxysmal/persistent AF can be cured. There is a learning curve and our understanding of the technique is improving. With longer ablation time we expect even better cure rates.

The Effect of Alcohol Consumption on Mortality & Morbidity following Lung Resection

N Chaudhuri; M Shackloth; J James; J McShane; R Grainger; A Grayson; R Page; M Carr
Cardiothoracic Centre NHS Trust, Liverpool, UK

Objectives: Increased alcohol consumption has been shown to be associated with adverse outcomes in non-thoracic general surgery. We decided to examine if a similar relationship existed between alcohol consumption and in-hospital mortality and morbidity following lung resection.

Methods: Between 1st January 2003 and 31st December 2005, 945 consecutive patients underwent lung resection at our institution. Variables collected included patient demographics, pulmonary function test and haematology measurements, co-morbidities, type of resection, and post-operative outcomes. Data was collected prospectively in a thoracic surgery database and analysed retrospectively. Patients were divided into two groups: low or no alcohol consumption (<15 units for women and <22 units for men; 799 patients) and the remaining patients as high alcohol consumption (146 patients). Logistic regression was used to adjust for significant differences between the groups.

Results: High alcohol consumption patients were younger ($p<0.001$), more likely to be male ($p=0.031$), current smokers ($p=0.032$), had worse respiratory function ($p=0.016$) and underwent more extensive resection ($p<0.05$). After adjusting for differences in case-mix and patient characteristics, patients with a high consumption of alcohol had similar complication rates to patients with a low consumption (adjusted odds ratio 0.84; $p=0.41$) (Table). Patients with high alcohol consumption however had a significantly higher mortality rate compared to those drinking less (adjusted odds ratio 2.75; $p=0.04$) and a trend towards increased need for postoperative ventilatory support (Table 1).

Conclusions: Higher alcohol consumption is associated with an increased risk of in-hospital mortality following lung resection. It is not associated with an increased risk of post-operative complications.

	Low (n=799)	High (n=146)	OR (95% CI)	p value
Complications %	27.2	24.1	0.84 (0.6–1.3)	0.41
Major complications %	13.5	10.5	0.74 (0.4–1.3}	0.30
Vetilatory support %	2	4.1	2.18 (0.9–5.6)	0.10
Mortality %	1.6	3.9	2.75 (1–7.3)	0.04

Table 1 Adjusted in-hospital outcomes

Does Cardiopulmonary Bypass Influence Long-term Outcome in Lung Cancer Patients undergoing Curative Resections?

S Soon; M Nannaparaju; S Hosmane; C Vare; P Krysiak; M Jones; R Shah
Wythenshawe Hospital, Manchester, UK

Objectives: It is postulated that cardiopulmonary bypass might hasten the spread of lung cancer (hence long-term survival) due to its inflammatory and immuno-modulatory effects. We tested this hypothesis by reviewing survival outcomes in lung cancer patients with concomitant cardiac pathology who underwent sequential cardiac then pulmonary surgery. They were compared to lung cancer patients who did not undergo cardiopulmonary bypass.

Methods: Patients who had both cardiac surgery and lung cancer resections were identified from hospital database (CPB group). Survival interval was determined from hospital records, the general practitioner and cancer registry data. Kaplan–Meier survival analysis was used and inter-group differences were tested using log rank comparison.

Results: Patients (1904) underwent lung cancer resections between 1996 and 2005. Fourteen patients (mean age 69.3 years) had lung cancer at the time of cardiopulmonary bypass. Eight patients had stage 1 disease. A control (non-CPB) was matched for age, sex extent of surgical resections and pathological stage. Cumulative 5-year survival was 53.18% in the CPB group versus 40.18% in the non-CPB group (p=0.93) % year survival in patients with stage 1 disease with CPB was 68.75% vs. non-CPB 48.6% (p=0.89).

Conclusions: The long-term survival of lung cancer patients does not appear to be affected by the use of CPB. There is no justification for avoidance of cardiopulmonary bypass in patients with lung cancer.

Factors Affecting 'Long-term' Survival Following Surgical Treatment Of Malignant Pleural Effusion

J Pilling; M Dusmet; G Ladas; P Goldstraw
Royal Brompton Hospital, London, UK

Objectives: To investigate prognostic factors following surgical palliation of malignant pleural effusion (MPE).

Methods: We reviewed 280 consecutive patients [109 male, median age 60 years (range 26–89)] undergoing 312 surgical procedures for palliation of MPE over 72 months. The commonest malignancies were breast (29%), malignant pleural mesothelioma (MPM) (25%), lung (12%), ovary (9%) and adenocarcinoma of unknown primary (5%). There were 198 thoracoscopic talc pleurodesis, 39 pleuroperitoneal shunts, 37 pleurodesis via an intercostal drain, 28 pleural biopsies alone and 9 long-term drains. Referring physicians provided survival data. Factors significance were examined with the log rank test (Kaplan–Meier), those significant entered a Cox logistic multivariate regression analysis.

Results: Follow up was 100% for a median of 1288 days (range 173–2329). Overall median post-operative survival was 211 days (95% CI 169–253). Survival was better with MPM [median 297 days (95% CI 234–360)] compared with breast [250 days (95% CI 172–328)]; ovary [222 days (95% CI 0–490)], adenocarcinoma of unknown primary [201 days (95%CI 149–253)] and lung [179 days (95% CI 52–306)]. Univariate analysis: pre-operative leucocytosis, hypoxaemia, raised alanine transaminase and hypoalbuminaemia were associated with a significantly reduced post-operative survival. Multivariate analysis: leucocytosis ($p<0.0001$), hypoxaemia ($p=0.014$) and hypoalbuminaemia ($p<0.0001$) maintained significance

Conclusions: These results demonstrate the value of an active approach to surgical palliation of MPE. Survival following surgical palliation of MPM is the benchmark from which the results of radical surgery must be judged.

		Median survival	[days (95%CI)]	
		Yes	No	p
WCC	>12 x 10^9/L	68 (36–100)	259 (207–311)	<0.00001
pO_2	>9.5 kPa	317 (220–414)	130 (75–185)	0.0015
Albumin	>35 g/L	667 (449– 885)	114 (87–141)	<0.00001
ALT	>41 iu/L	69 (36–102)	250 (199–301)	0.0007

Table 1 Survival times by pre-operative factors

Death in Low-risk Cardiac Surgical Patients: The FIASCO Study

D Freed[1]; A Drain[1]; J Kitkat[1]; M Jones[2]; S Nashef[1]
[1]Papworth Hospital, Cambridge, UK; [2]Wythenshawe Hospital, Manchester, UK

Objectives: To find out why some low-risk patients die after cardiac surgery.

Methods: All low-risk patients (EuroSCORE ≤ 2) who died after cardiac surgery in one institution from 1996 and 2005 were studied. A careful case-note review was undertaken. Deaths were classified into non-cardiac and cardiac, subclassified into unavoidable deaths or due to failure in achieving a satisfactory cardiac outcome (FIASCO). Classification was by both intra-institutional and independent extra-institutional review of pre-operative, operative and postoperative information from the case notes and post-mortem findings.

Results: Between 1996 and 2005 there were 16 deaths in 4294 low-risk patients (mortality 0.37%). Internal and external review agreed that 10 deaths were non-preventable (CVA, bronchopneumonia, etc) and that avoidable FIASCO accounted for 6 deaths. Of the deaths considered to be preventable, all had probable errors of technique and 3 also had additional system errors.

Conclusions: No cardiac operation is without risk. Mortality, though fortunately rare, can still happen even in low-risk patients and to date has never been properly studied in this context. Despite an extremely low mortality in the low risk group FIASCO still accounts for 1 in 3 deaths. This suggests that mortality may be reduced even further as part of a quality improvement programme.

Does Steroid Replacement Therapy after Surgery for Congenital Heart Disease Increase Infectious Events?

F Shikata[1]; M Takeuchi[1]; H Imanaka[1]; K Tachibana[2]; T Nishida[1]; K Kagisaki[1]; J Kobayashi[1]; T Yagihara[1]; S Kitamura[1]

[1]National Cardiovascular Center, Osaka, Japan; [2]Osaka Medical Center and Research Institute for Maternal and Child Health, Osaka, Japan

Objectives: Although steroid replacement therapy may improve haemodynamics in infants after surgery for congenital heart disease (CHD), it is unknown whether the therapy increases infectious events. We retrospectively investigate the influence of steroid replacement therapy on infectious events after surgery for CHD.

Methods: Thirty-three consecutive patients with age <3 months received steroid replacement therapy (hydrocortisone iv, 1 mg/kg every 6 hours, for maximum 6 days) after surgery for CHD in 2004 (Steroid group). These patients were compared with a control group of 33 patients who were not on steroid replacement therapy in 2003 (Control group). Infectious events were defined as body temperature >38°C, bacteraemia, pneumonia, and positive culture in catheter, and wound.

Results: Infection free ratio for 60 days was not significantly different between the two groups (54% in Steroid group versus 58% in Control group, p=0.31). There was a tendency of shorter ICU stay (11 versus 16 days, p=0.48) and hospital stay (61 versus 84 days, p=0.36) in the Steroid group. There was 1 hospital death in the Steroid group and 4 in the Control group.

Conclusions: Steroid replacement therapy after surgery for CHD may not increase infectious events.

Paper Withdrawn

Technique for Reducing Sternal Dehiscence – Mathematical Analysis, in vitro & Clinical Study

L John
Kings College Hospital, London, UK

Objectives: A closure technique was designed to reduce sternal dehiscence by redistributing the transverse disrupting force. In addition to 8 transverse wires, 4 ethibond sutures placed longitudinally interlock anterior to the sternotomy. The disrupting force is resisted by both oblique and transverse sternal segments. The study aimed to assess this modified technique (MT) by mathematical analysis, in vitro and clinical studies.

Methods: (a) Mathematical analysis: Using force vectors a 'strength' parameter (S) was derived for MT as well as for closures using 2 figure-of-eight and 4 transverse sutures (2C), 6 (6T), 8 (8T), 10 (10T) and 12 transverse sutures (12T).
(b) In vitro study: Using silastic rubber sternums and a distraction force of 100N, a dehiscence tendency (DT) was measured (n=10) for each of the 6 closures.
(c) Clinical study: The incidence of sternal dehiscence for the first 4 years of a consultants' practice (using 8T) was compared with the second 4 years (using MT).

Results: (a) Derived S values, MT: 11.4; 6T:4.3; 8T:5.7; 10T:7.1; 12T:8.5; 2C:9.1.
(b) Measured DT values (mean±SEM), MT: 149±14; 6T:256±13; 8T:223±9; 10T:213±13; 12T:203±8; 2C:294±15. DT was significantly smaller for MT ($p<0.003$).
(c) The incidence of dehiscence was significantly less in the second 4 years (MT) than in the first 4 years (8T): 0.2%(1/529) vs. 1.6%(13/788); $p=0.01$.

Conclusions: Mathematical analysis, in vitro and clinical studies suggest that the modified closure technique can reduce the incidence of sternal dehiscence.

Inhibition of Transcription Factor NF-κβ Signalling in Vein Graft Accelerated Intimal Hyperplasia

J Finch[1]; T Navin[2]; D Haskard[3]; B Foxwell[2]; C Monaco[2]; P Hornick[1]
[1]Department of Cardiothoracic Surgery Hammersmith Hospital, London, UK; [2]Cytokine Biology of Vessels Kennedy Institute of Rheumatology Imperial College London, London, UK; [3]BHF Cardiovascular Sciences National Heart and Lung Institute Imperial College London, London, UK

Objectives: Accelerated intimal hyperplasia (AIH) remains the leading cause of vein graft failure and no successful preventative therapy currently exists. Inflammatory signalling is pivotal in AIH pathogenesis and mediators such as transcription factor NF-κβ represent potential therapeutic targets.
We hypothesise that genetic manipulation of upstream NF-κβ signalling pathways in vein VSMCs in vitro will identify a leading therapeutic target to ameliorate AIH in vivo.

Methods: Vein graft AIH was generated in a porcine jugular vein to carotid artery interposition model and VSMC cultures established from control and diseased vein segments. VSMCs were infected with adenoviruses expressing mutated forms of the main kinases within the NF-κβ pathway (IKK1 and 2) or Toll-like receptor (TLR) adaptor molecules (such as the shared IL-1/TLR adaptor protein MyD88). Transfected cells were incubated with pro-inflammatory cytokines and TLR ligands. Resulting expression of NF-κβ-dependant AIH mediators such as cytokines, MMPs and tissue factor, were assessed with Q-PCR and ELISA.

Results: IL-1 and TLR-2, -3 and -4 ligands induced upregulation of IL-6 and MMP-3 expression in vein graft VSMCs. For TLRs-3 and -4 a significantly greater response was seen in diseased as opposed to control cells (TLR-3: 13.4-fold vs. 5-fold, TLR-4: 5.4-fold vs. 1.8-fold increase in IL-6) suggesting upregulation of these TLRs in the diseased state.
Overexpression of mutated MyD88 inhibited expression of IL-6 by 65% and MMP-3 by up to 80% ($p<0.05$ vs. control adenovirus).

Conclusions: Inhibition of upstream NF-κβ signalling in VSMCs with mutated MyD88 significantly reduced the expression of key AIH mediators highlighting a potential therapeutic target for inhibition in vivo.

Blood Pressure Control Disturbance in Aortic Stenosis is due to Baroreflex Dysfunction caused by the Development of Heart Failure

H Kattach[1]; H Becher[2]; R Pillai[1]; R Evans[3]
[1]Department of Cardiothoracic Surgery John Radcliffe Hospital, Oxford, UK; [2]Department of Cardiology John Radcliffe Hospital, Oxford, UK; [3]Nuffield Department of Anaesthetics Radcliffe Infirmary, Oxford, UK

Objectives: The aim was to demonstrate the nature of blood pressure control disturbance in aortic stenosis (AS) and its potential association with the disease reaching the heart failure stage.

Methods: Baroreflex and vascular contractility were studied in a rabbit model. Thirty-six animals were divided into three groups: group 1: sham operated; group 2: moderate AS without failure; and group 3: severe AS with left ventricular (LV) dysfunction. The stenosis was created by banding the ascending aorta reducing the cross-sectional area to 50% and 20% of the original area in groups 2 and 3, respectively.
The pressure gradient and LV function were assessed by echocardiography.
Baroreflex response was measured by analysing the heart rate in relation to mean systemic blood pressure (measured invasively) after bolus injection of phenylephrine and glyceryl trinitrate. A four-parameter sigmoid curve of the baroreflex was fitted.
Vascular contractility with phenylephrine, angiotensin-II and prostaglandin-F-2 · were studied in an organ bath on rings of carotid arteries.

Results: The gradient and LV mass changes are demonstrated in the table.
There was no difference between the baroreflex curves in groups 1 and 2. However, the slope was significantly suppressed in group 3 (Table).
There was no difference in vascular contraction with phenylephrine, angiotensin-II or prostaglandin-F-2 ·.

Conclusions: Blood pressure control disturbance in AS is due to baroreflex dysfunction, rather than vasoconstriction dysfunction, and it only occurs with the development of heart failure.

	Group 1	Group 2	Group 3	p value (1vs.2/1vs.3)
Gradient (mmHg)	5±1	44±3	66±9	<0.01/<0.01
LV mass (g)	4.6±0.2	5.2±0.2	6.1±0.2	<0.05/<0.001
Baroreflex Slope (beat/min/mmHg)	0.036±0.004	0.038±0.007	0.017±0.003	NS/<0.05

Paper Withdrawn

Positron Emission Tomography in Patients undergoing Lobectomy by Video Assisted Thoracoscopic Surgery: A Single Centre UK Experience

A Khan; S Harden; C Peebles; I Brown; N McGill; K Woods; S Tanser; N Singh; B Addis; K Amer
Southampton General Hospital, Southampton, UK

Objectives: Mediastinal nodal staging is important in VATS lobectomy for early lung carcinoma. We set to examine whether PET correlates with histology in VATS lobectomy.

Methods: Between April 2005 and November 2006, we attempted 28 VATS lobectomies for presumed non-small cell lung carcinoma. Inclusion criteria were stage I/II without lymph node involvement. Not all patients had a histological diagnosis preoperatively. The decision to include was based on positive PET scans. Perioperative data was collected prospectively.

Results: Six were converted to open thoracotomy (21.4%). Histology revealed 3 benign disease and 25 primary lung cancinoma. Eight (28.5%) were T1 disease, sixteen T2 (73.9%) and one T3 disease. Two had N1 and two N0 diseases. One (–ve PET) died of distant metastases 6 month later (converted group). Hospital stay was median 3 days. One stayed for 14 days due to persistent air leak. One required ICU care and inotropes.
PET correlated with histological diagnosis in 23 cases. There were 3 (10.7%) false negative, and 2 (7.1%) false positive. Three patients with negative PET had histologically proven mediastinal metastases. One patient had an additional primary not picked up by PET. One patient had increased uptake, which was an inflammatory mass. Two had increased uptake in hilar nodes, which was not confirmed on histology.

Conclusions: VATS lobectomy can be performed with low morbidity and mortality. PET scan can be used as an alternative to routine mediastinoscopy, as it has corresponding false negative and false positive rates. Systematic node sampling during VATS lobectomy seems to be the way forward.

Does Size Matter? A Randomised Control Trial of Blake Drains versus Portex Drains following Cardiac Surgery

N Roberts[1]; M Bates[1]; M Boehm[2]; P Braidley[1]; G Cooper[1]; T Spyt[2]
[1]Northern General Hospital, Sheffield, UK; [2]Glenfield Hospital, Leicester, UK

Objectives: Despite advances in minimally invasive approaches to cardiac surgery, many clinicians still persist in the use of large, rigid chest drains.
Encouraging results of small, flexible Blake drains have been described in case control studies and small randomised trials. We aimed to compare the efficacy of two drain types following cardiac surgery in a randomised control trial with primary outcome measure depth of pericardial effusion 3–5 days post drain removal.

Methods: Prospective randomised control trial at two university teaching hospitals. One hundred and ninety-nine cardiac surgical patients were randomised at surgery to receive either small bore flexible Blake drains (19F) or larger rigid Portex drains (28F). Drains were removed according to the study protocol and patients underwent echocardiography 3–5 days post drain removal to measure residual pericardial effusion. The study was powered to detect non-inferiority between the two drain types.

Results: Ninety patients received Blake drains (B) and 109 patients received Portex (P) drains. There were no statistically significant differences in pre-operative variables between the groups. There was no difference in the number of drains inserted per patient between groups. Mean difference in size of pericardial effusion between groups (B–P) was 1.96 mm (95%CI –0.02, 3.95 mm).
There was no difference in requirements for draining pericardial effusions 1.1% vs. 1.9%, or insertion of further chest drains 8.8% vs. 7.2%.

Conclusions: The performance of small bore Blake drains is not inferior to standard Portex drains following cardiac surgery. The use of smaller, flexible chest drains is a safe and less invasive option following cardiac surgery.

Incidence of Residual Shunt after Percutaneous Device Closure versus Surgical Closure of Atrial Septal Defects in Adults

S Nair; S Brecker; M Jahangiri
St Georges Hospital NHS Trust, London, UK

Objectives: Percutaneous closure of atrial septal defects (ASD) and patent foramen ovale (PFO) have become established techniques. Incidence of residual shunt after percutaneous or surgical closure is not well documented. The aim of this retrospective study was to assess the incidence of residual shunts after surgical compared to percutaneous closure.

Methods: A retrospective analysis of patients who underwent percutaneous and surgical closure of PFO and ASD from September 2003 to May 2006 was carried out. Ostium primum and sinus venosus defects were excluded from analysis. Primary outcome measured was residual shunt prior to discharge from hospital and at 3 months after closure. Secondary end-points included prodecure-related death, days of hospital stay and complications.

Results: Group 1. Patent foramen ovale (PFO)
119 patients had percutaneous device closure. Three (2.5%) patients had minor shunts after the procedure. Three months later, 2(1.7%) of these patients had residual shunts.

Group 2. Secundum atrial septal defect (ASD)
128 patients were identified. 26 had surgical closure and 102 had device closure. Incidence of minor residual shunt after surgical and device closure was 0% and 14.7% (15 out of 102 patients) prior to discharge (p=0.03) which decreased to 7.8% (8 out of 102) after 3 months in the device closure group (p=0.36). There was no mortality in either group.

Conclusions: Percutaneous closure of PFO has a low incidence of residual shunting. Compared to surgical closure, percutaneous closure of ASD is associated with a statistically significant higher incidence of residual shunt in the early post-procedure period.

Stentless versus Stented Biological Aortic Valves: A Meta-analysis

J Dunning; B Kunadian; A Thornley; M De Belder; S Kendall; R Graham; M Stewart; J Thambyrajah; S Hunter
James Cook University Hospital, Middlesbrough, UK

Objectives: Stentless aortic bioprostheses have been advocated as being superior to conventional bioprosthetic valves, with benefits including superior left ventricular mass regression, and larger effective orifice area. Several high quality randomised studies now exist on this topic and we sought to summarize them by meta-analysis.

Methods: The literature was searched from 1995 to the present, in MEDLINE, EMBASE, CINAHL, metaRegister of Controlled Trials, and the Cochrane database. Experts were also contacted and reference lists searched. Studies were combined using a random effects model. Heterogeneity was assessed and a sensitivity analysis performed. Publication bias was also investigated.

Results: 10 studies were identified that included 919 patients, using the Sorin Freedom, Medtronic Freestyle, Edwards Prima Plus, St.Jude Toronto and Biocor valves.
The mean post-operative aortic valve gradient was lower in the stentless groups (WMD 3.57 mmHg, [95%CI 2.78–4.36] and the effective orifice area index was also lower (WMD 0.21 cm^2 (95%CI 0.16–0.26). The left ventricular mass index was significantly lower in the stentless groups at 6 months (WMD 6.42 [95%CI 1.21–11.63], p=0.02), but this improvement disappeared after 12 months (WMD 1.19 [95% CI –4.15–6.53]).
The weighted mean increase in crossclamp time was 23 minutes and the increase in bypass-time was 29mins with a stentless valve.

Conclusions: We have shown that Stentless aortic valves provide an improved level of left ventricular mass regression at 6 months, reduced aortic gradients and an improved effective orifice area index, at the expense of a 23 minute longer cross-clamp time and a 29 minute longer bypass time.

Hybrid Procedure for Staged Palliation of Hypoplastic Left Heart Syndrome

P Venugopal; T Krasemann; E Rosenthal; S Qureshi; C Austin; D Anderson
Guys and St Thomas NHS Trust, London, UK

Objectives: Surgical treatment and results for hypoplastic left heart syndromes (HLHS) and its variants have improved considerably over the years. The highest mortality and morbidity is during the first stage of palliation. We have introduced a 'Hybrid' operation (open surgery combined with interventional cardiological technique) as an alternative approach to a purely surgical first stage Norwood operation for these patients.

Methods: Since December 2005 eight patients underwent hybrid procedure for initial palliation. This consisted of surgical banding of both the branch pulmonary arteries ± open atrial septectomy or balloon atrial septostomy followed by stenting of the patent ductus arteriosus.

Results: There was no mortality following the initial procedure. Two patients went on to have a successful stage two operation. One patient died following stage two correction due to sepsis. Other five patients are under follow up and are awaiting stage two repair.

Conclusions: In selected patients the hybrid procedure can be used as an alternative to classic approach in surgical management of HLHS.

Transthoracic versus Transhiatal Oesophagectomy

R Bahgeri; Z Haghi; M Ghaemi
Mashhad University of Medical Sciences, Mashhad, Iran

Objectives: Due to our geographical area of living, oesophageal cancer is one of the most common cancers in gastrointestinal system. The treatment of choice in this disease is surgery. Because there are various kinds of surgical techniques, in this study we tried to compare common techniques in these groups of patients.

Methods: Between 1990 and 2000 all patients with oesophageal cancer in middle and distal third of oesophagus whom underwent transhiatal or transthoracic oesophagectomy, have been studied, Then two groups (transhiatal or transthoracic) are studied separately about factors such as intraoperative bleeding, operation time, post-operation morbidity, time of hospitalisation, mortality still 30 days after surgery, incidence of anastomosis leak and stenosis and survival have been evaluated.

Results: 156 patients with M/F=110/46 ratio. One hundred and sixteen patients with squamous cell carcinoma (SCC) and 40 patients with adenocarcinoma. Most of them in stage 2 of disease with in comparing study between transhiatal groups with Ivor Lewis groups (with similarisation), intraoperate bleeding, cardiac and pulmonary complications after surgery, mean time of hospitalisation, mortality in 30 days after surgery and incidence of late stenosis and survival are similar but the incidence of anastomosis leakage was higher in transhiatal group and mean operation time was longer in Ivor Lewis group. Since the leakage was more common in transhiatal group but mortality rates were the same, it indicates that leaking in neck has a better outcome.

Conclusions: According to the results of this study, both of these techniques are similar and choosing one of them depends on the surgeon's choice and the patient's conditions.

A Novel Surgical Approach to close an Acute Ventricular Septal Defect Using an Occluder Device

C Rajakaruna; J Hill; A Sirker; B Rana; O Wendler
Kings College Hospital, London, UK

Objectives: Surgical repair of acute ischaemic ventricular septal defects (aVSD) is still associated with high mortality and morbidity. We report a novel surgical procedure performed to close an aVSD using an occluder device.

Methods: A 75-year old male was transferred to our institution 4 days after an acute anterior myocardial infarction with an aVSD confirmed on echocardiography (anterior VSD, diameter 7–9 mm, Qp:Qs shunt ratio 3.4:1). Estimated systolic pulmonary artery pressure (PAP) was 50 mmHg with preserved right ventricular (RV) function and left ventricular ejection fraction of 45%. The patient was stabilised with an intra aortic balloon pump (IABP) and inotropes. Surgery was performed on the 6th day after admission when the patient became more haemodynamically unstable. CPB was establishing using bicaval cannulation and revascularisation was performed with a quadruple coronary bypass on the beating heart. An epicardial 3-D echocardiogram showed the aVSD with a diameter of 18 mm by 21 mm in the mid septum. Ventricular fibrillation was induced and the RV opened with a 2 cm incision in the anterior wall directly above the aVSD. An occluder device (Amplatzer®) was deployed into the aVSD and the patient weaned off CPB with IABP support and noradrenaline (0.09 µg/kg/hr) infusion.

Results: The patient was discharged home mobilising independently 32 days after surgery. On 6 months follow-up a small residual shunt through the device was noted with systolic PAP estimated to be 20 mmHg, however, the patient was asymptomatic.

Conclusions: This is an alternative surgical approach to the treatment of aVSD, which may improve results in the future.

Propensity Score Analysis of Early & Late Outcome after Redo Off-pump & On-pump Coronary Artery Bypass Grafting

H Vohra; T Bahrami; S Farid; A Mafi; G Dreyfus; M Amrani; J Gaer
Department of Cardiac Surgery Harefield Hospital Royal Brompton and Harefield Hospitals NHS Trust, London, UK

Objectives: The purpose of this study was to compare early and late results of redo CABG with (redo-ONCAB) and without (redo-OPCAB) cardiopulmonary bypass.

Methods: From April 2001 to September 2006 redo-CABG was performed in 110 patients (redo-ONCAB=50 and redo-OPCAB=60). Applying the propensity score, 43 OPCAB patients were matched with 43 ONCAB patients. The mean Euroscore was 5±4.7 and 5±3.4 for redo-ONCAB and redo-OPCAB, respectively (p=0.5). The number of diseased coronary arteries were 3±0.5 and 2±0.8 in redo-ONCAB and redo-OPCAB, respectively (p<0.01).

Results: Twelve patients underwent OPCAB through anterior thoracotomy while the rest of the patients (n=74) underwent median sternotomy. Mean number of grafts performed were 3±0.8 in redo-ONCAB and 2±0.6 in redo-OPCAB (p<0.05). The need for post-operative insertion of intra-aortic balloon pump (IABP) was higher (p=0.02) in redo-ONCAB (n=9, 21%) than redo-OPCAB (n=1, 2%). The duration of post-operative ventilation was 55±98.7 hours for redo-ONCAB and 10±12.8 hours for redo-OPCAB (p=0.008). No differences were found in the incidence of other post-operative complications. The 30-day mortality rate was 6.9% for redo-ONCAB (n=3) and 2.3% redo-OPCAB (n=1; p=NS). Mean follow-up for redo-ONCAB was 30±21.3 months (range 0.1-63 months) and that of redo-OPCAB was 37±19.2 months (0.1–62.5 months). Actuarial survival at 5 years was 87±5.5% for redo-ONCAB and 95±3.2% for redo-OPCAB (p=0.17). Event-free survival was 71±8.0% for redo-ONCAB and 78±7.2% for redo-OPCAB (p=0.32).

Conclusions: OPCAB is an acceptable strategy in selected patients requiring re-do CABG. Redo-ONCAB and redo-OPCAB have similar early and late outcomes. However, redo-OPCAB is associated with reduced need for IABP and earlier extubation.

Proteomics of the Right Ventricle in a Model of Right Ventricular Hypertrophy & Early Failure

A Sheikh; C Barrett; N Villamizar; A Valente; O Alzate; D Craig; A Lodge; J Lawson; C Milano; J Jaggers
Duke University, Durham, USA

Objectives: Right ventricular hypertrophy (RVH) and subsequent dysfunction is common in patients with congenital heart defects, but the molecular mechanisms underlying change from adaptive hypertrophy to dysfunction remain elusive. We utilised the novel technique of proteomics to characterise protein changes in RV myocardium in a neonatal model of RVH and early failure.

Methods: Twelve neonatal piglets were equally randomised to pulmonary artery banding (PAB group), or sham operation (thoracotomy without banding). After 4 weeks, RV morphology and function were assessed using magnetic resonance imaging (MRI). Animals were sacrificed. Proteomics of RV myocardium was performed. RV proteins were separated by 2D Difference Gel Electrophoresis (DIGE) using fluorescent Cyanine dyes. After imaging, software analysis revealed protein spots differentially expressed between the 2 groups; these spots were excised and identified using mass spectrometry.

Results: On MRI, PAB animals demonstrated significant RV hypertrophy, cavity dilatation and mild systolic impairment (RV ejection fraction 39.8±15% vs. 56.7±10% controls, $p<0.05$). RV free wall mass on harvest confirmed RVH. Proteomic analysis revealed 17 proteins that were significantly differentially expressed: 5 structural proteins, 5 metabolic enzymes, 2 stress proteins, and 5 miscellaneous proteins. Expression of tropomyosin (alpha and beta chains), calsarcin-1, vinculin and LIM protein was increased, as were the metabolic enzymes, though ATP synthase fell.

Conclusions: This is the first study characterising RV protein changes in a large animal model specifically capturing the change from compensated hypertrophy to early failure. These proteins give important mechanistic clues and potential therapeutic targets in the treatment of neonatal hypertrophy and failure.

Preoperative Intravenous Hydration improves Surgical Outcomes in Patients with Mild to Moderate Renal Dysfunction Undergoing Coronary Surgery

R Birla; B Keogh; S Kolvekar; D Lawrence; A Smith; J Yap
The Heart Hospital UCLH Trust, London, UK

Objectives: Postoperative renal dysfunction is a common and serious morbidity occurring in patients after CABG. Although the aetiology is multifactorial, the most common cause is acute tubular necrosis due to hypoxic damage to nephrons. This could be due to hypotension, hypovolaemia or preoperative dehydration. We studied the effects of prehydrating the patients intravenously overnight with normal saline to maintain preoperative normovolaemia in patients undergoing CABG.

Methods: Prospectively collected data on 433 consecutive patients undergoing isolated CABG in 2002 without prehydration were compared with 388 in 2006 who were prehydrated overnight prior to surgery. Patients on preoperative dialysis were excluded. Post-operative renal function was described as being normal if serum creatinine was less than 1.5 mg/dL, and abnormal if serum Creatinine was more than 1.5 mg/dL or a rise in creatinine was more than 0.7 mg/dL or if there was need for renal replacement therapy.

Results: Demographics of the two groups were comparable with respect to mean age (64.7 versus 65.5), gender (male: female ratio 77:23 versus 80:20), mean weight (80.1 versus 78.4), diabetes (28.4% versus 26.1%), left ventricular function (good 66.9% versus 67%, moderate 21.5% versus 24.2%, poor 6.9% versus 7%, unknown 4.6% versus 1.4%) in the non-hydrated and prehydrated populations respectively. The outcome variables for the two groups were as in the table:

Conclusions: Preoperative hydration results in a lower postoperative rise in creatinine and a lower postoperative mortality. The maximum benefit was seen in patients who had a mild to moderate renal dysfunction.

	No prehydration group	Prehydration group	p value
Number in group	433	388	
Mean percentage rise in creatinine	28	18	0.015
Number of pts with a rise >0.7 mg/dL	54	31	0.052
Number of pts with peak >2 mg/dL	52	37	0.329
Mean peak post-op creatinine	126.4	114.9	0.017
Requirement for renal replacement therapy	14	5	0.065
Mortality	19	4	0.005

Table 1 Outcome variables

Childhood Infective Endocarditis: Pre-operative Predictors of Native Valve Preservation & Survival

E Hickey; C Manlhiot; G Van Arsdell; W Williams; C Caldarone; B McCrindle
The Hospital for Sick Children, Toronto, Canada

Objectives: We sought to determine patient-specific characteristics and their affects on outcome in children with infective endocarditis (IE).

Methods: All 30 children who underwent surgery for culture-confirmed IE in our institution since 1978 were subjected to retrospective risk–hazard analysis.

Results: Patient age ranged from 10 weeks to 17.5years (mean 9.8). Underlying congenital cardiac lesions were present in 22 (77%), although in 6 this was not known. Previous intra-cardiac repair had been undertaken in 9 (30%). Septic emboli had occurred in 46% (13) at the time of presentation, causing permanent strokes in 5 (19%).

Streptococcus viridans (SV) and *Staphylococcus aureus* (SA) were the predominant organisms. SV was specifically associated with underlying congenital lesions ($p<.01$). SA was associated with abscess formation ($p<0.03$), septic clinical features ($p<0.04$), acute deterioration ($p<0.01$), prolonged ICU ($p<0.01$) and death ($p<0.01$).

The aortic, mitral and triscuspid valves were involved with equal frequency, more than the RVOT. Two valves were involved in 30% cases. The native valve was preserved at operation in 22 (73% cases). Univariate predictors of the need for valve replacement included increased leaflet thickening ($p<0.01$) and the occurrence of septic embolisation ($p=0.02$), whereas moderate/severe valvular regurgitation was not significant.

Five-year freedom from death related to endocarditis is 84%, and freedom from reintervention 80%. 96% patients are NHYA I at latest follow-up (mean 5.1, max 19 years).

Conclusions: Infective endocarditis in childhood is aggressive, with a high incidence of embolic complications and double valve involvement. Although the native valve can frequently be preserved, the need for valve replacement is suggested by leaflet thickening and pre-operative embolisation. Survival and functional outcomes are favourable.

The Difference in Graft Patency Between Venous & Arterial Grafts may be due to their Ability to Handle Oxidative Stress

A Muir; P McKeown; U Bayraktutan
Royal Victoria Hospital, Belfast, UK

Objectives: The difference in patency rates between saphenous vein (SV) and internal mammary artery (IMA) following coronary artery bypass grafting (CABG) is well documented. This may in part be due to differences in their ability to cope with oxidative stress. We aimed to investigate the relative contributions of reactive oxygen species (ROS) to endothelial (dys)function in these conduits.

Methods: SV and IMA samples were harvested during routine CABG. Using an organ-bath methodology, the conduits were pre-contracted with norepinephrine. Endothelium-dependent relaxation was measured with acetylcholine in the absence and presence of rotenone, allopurinol and indomethacin. Rotenone is an inhibitor of mitochondrial NADH dehydrogenase, allopurinol is an inhibitor of xanthine oxidase and indometacin is an inhibitor of cyclooxygenase. All of these enzymes are implicated in the production of excessive ROS.

Results: With all 3 chemicals, there was a decrease in the relaxant responses in IMA following incubation with the study drugs (rotenone, 37.4±6.2% to 31.9±7.6%, $p<0.0001$; allopurinol, 54.9±8.7% to 32.1±9.3%, $p<0.0001$; indomethacin, 48.0±8.8% to 26.9±3.4%, $p<0.0001$). Conversely, there was an increase in the relaxant responses in SV to these drugs (rotenone, 22.7±5.2% to 38.5±5.3%; allopurinol, 14.3±3.7% to 26.8±5.1%, $p<0.0001$; indometacin, 19.9±6.2% to 42.0±6.4%, $p<0.0001$).

Conclusions: All 3 chemicals under investigation reduce the amount of available ROS in solution, and hence increase the bioavailability of nitric oxide. With SV, there has been the expected response, indicating that these enzymes are important in regulating venous vascular tone. With IMA, these enzymes are less important, and other regulatory enzyme systems are the principal mediators of arterial vascular tone.

Current Approaches to Pulmonary Regurgitation

A Frigiola[1]; V Tsang[1]; J Nordmeyer[1]; L Coats[1]; T Lee[1]; F Walker[2]; C Van Doorn[1]; A Taylor[1]; P Bonhoeffer[1]; M De Leval[1]

[1]Great Ormond Street Hospital, London, UK; [2]The Heart Hospital, London, UK

Objectives: To evaluate the effects on ventricular function and volumes following percutaneous pulmonary valve implantation (PPVI) (group 1) and surgical right ventricular outflow tract reconstruction (RVOTR) with pulmonary homograft replacement (PVR) (group 2).

Methods: Thirty-six patients were prospectively examined. The surgical and interventional cardiological techniques were standardised. (Group 1) Those who had PPVI for PR alone (11, mean age 20±9 years, 64% tetralogy of Fallot) were compared to (Group 2) those who had surgical homograft placement with RVOTR (25, mean age 21±13 years, 96% tetralogy of Fallot). Mean age at primary repair did not differ between the two groups (4.3±6.6 years). Magnetic resonance imaging and tissue Doppler echocardiography were performed prior to, and 1 year following interventions.

Results: Before procedure, NYHA was 2.1±0.5 in group 1 vs. 1.2±1.0 in group 2 ($p<0.05$). Following interventions, RV and LV isovolumic acceleration (IVA) did not change in both groups. MRI results are summarised in Table 1; p = statistical difference between the PVR/RVOTR and PPVI group; PRF=pulmonary regurgitant fraction; $p<0.001$; $p<0.05$.

Conclusions: Following PVR and PPVI, there is a significant reduction in RV volumes and an improvement in RV function. Importantly, in both groups, LV effective SV increased, and this may be the parameter on which to judge the success of the procedure, being the RV parameters affected by the physical reduction of the RV size. These preliminary results suggest that PPVI can offer an extra dimension in the management of complex RVOT lesions.

	PPVI (group 1)		PVR (group 2)		p
	pre	post	pre	post	
RV EDV(mL/m^2)	106±27	89±25	151±49	97±32	0.004
RV ESV (mL/m^2)	49±20	40±16	80±43	46±23	0.002
RV effective SV (mL/beat)	53±14	67±16	63±20	72±16	ns
LV EDV(mL/m^2)	71±17	81±15	68±12	72±14	<0.05
LV effective SV (mL/beat)	60±25	74±17	61±18	73±16	ns
PRF (%)	34±13	5±9	41±8	10±12	ns

Does the Choice of Risk Adjustment Model Influence the Outcome of Surgeon Specific Mortality Analysis

S Grant[1]; A Grayson[2]; M Jackson[2]; J Au[3]; B Fabri[2]; G Grotte[4]; B Bridgewater[1] on behalf of NWQIP

[1]South Manchester University Hospital, Manchester, UK; [2]The Cardiothoracic Centre, Liverpool, UK; [3]Blackpool Victroria Hospital, Blackpool, UK; [4]Manchester Royal Infirmary, Manchester, UK

Objectives: To compare the implications of using a locally derived risk stratification model and the logistic EuroSCORE when analysing surgeon specific mortality outcomes.

Methods: Retrospective analysis of prospectively collected data on 14,637 cardiac surgery patients from four hospitals and 31 surgeons. We have compared the predictive ability of the logistic EuroSCORE (un-calibrated), the logistic EuroSCORE calibrated for contemporary performance and a locally derived logistic regression model. We have then used each model to create risk adjusted mortality (RAM) funnel plots for individual surgeons to examine the difference seen in defining outlying outcomes.

Results: Four hundred and fifty-eight (3.1%) in-hospital deaths were recorded. The expected mortality rates and ROC curve values were 5.8% and 0.80 for the un-calibrated logistic EuroSCORE, 3.4% and 0.80 for calibrated logistic EuroSCORE, and 3.1% and 0.82 for the local model. Observed in-hospital mortality funnel plots showed one surgeon outside the upper 99% control limit (CL), and two additional surgeons outside the upper 95% CL. The RAM funnel plot using un-calibrated logistic EuroSCORE showed all surgeons, except one, below the average regional performance; no surgeons were above the 95% CL. The RAM funnel plot for calibrated logistic EuroSCORE and the local model showed similar results with surgeons evenly spread around the average regional performance and no surgeons above the 99% CL.

Conclusions: The un-calibrated EuroSCORE significantly over-predicted mortality. The local model had better 'performance' than the calibrated EuroSCORE, but when used for defining outlying performance drew similar conclusions. This suggests no benefits from using the increased complexity of a local model over the appropriately calibrated EuroSCORE.

A Comparative Perspective, the Cardiac Patient Journey. The surgeon, the nurse & the patient.

M Lewis
Royal Sussex County Hospital, Brighton, UK

This presentation aims to give a comparative perspective from the cardiac surgeon, the nurse and the patient. It will focus on the key events and issues surrounding the patient's journey and intends to demonstrate the necessary factors for the delivery of high quality care. It stresses the significance of a collaborative approach between healthcare professionals and the patient, ever more important as we address the issues surrounding new ways of working and future of cardiothoracic practice. Moreover, it will invoke a reminder to healthcare professionals of what dominates the patient experience. This presentation hopes to create the foundations of further discussion for delivery of care.

Study Comparing Open Long Saphenous Vein Harvesting With a Less Invasive Standard Bridging Technique

B Krishnamoorthy; K Nouman; P Kola; Y Nizar; P Waterworth
Wythenshawe Hospital, South Manchester, UK

Objectives: Conventional saphenous vein harvesting techniques can lead to wound complications and delayed mobilization. A less invasive vein harvesting technique using standard bridging can reduce leg pain and wound healing problems, gives good patient satisfaction and a better cosmetic appearance.

Methods: One hundred consecutive patients were prospectively randomised into two groups. A single surgical assistant operated all 100 patients. Group 1: 50 patients whose long saphenous veins (LSV) were harvested by the traditional continous long incision. Group 2: 50 patients whose LSVs. were harvested by a bridging technique. This entailed 2–3 cm interrupted skin incisions with 5–6 cm skin gaps between incisions. We have used standard surgical instrumentation and direct visualisation for both groups. The Likert scale pain scoring system (0–10) was used for this study. The patients were asked for their overall satisfaction about the skin incision before their discharge from the hospital.

Results: The pain level in the bridging group was significantly better than the traditional open vein harvesting group, both at rest ($p<0.001$) and with movement ($p<0.001$). Patient satisfaction was significantly better in the bridging group ($p<0.001$).

Conclusions: Those patients whose LSV is harvested by the less invasive bridging technique experience less post operative pain and are more satisfied with their outcome.

Cardiac Assessment at the Cutting Edge

J Smith; M Coombs
Wessex Cardiac Centre, Southampton General Hospital, Southampton, UK

Across all areas of cardiac care, skilled patient assessment is pivotal to inform clinical decision-making and guide patient management plans. To assist practitioners in developing physical assessment and history taking skills, this workshop will introduce systematic patient assessment through use of patient case studies. The key principles of inspection, palpation, percussion and auscultation will be reviewed.

The workshop does not intend to present a complete overview of patient assessment, but will focus on specific patient problems that may be found in the pre-operative cardiac surgery patient population. Particular attention will be placed on the respiratory and cardiac systems. Two discrete case studies will be presented to allow exploration of routine pre-operative assessment and pre-operative assessment of the critically ill cardiac patient.

This is an interactive workshop designed for all to share clinical experiences in this specialist area.

Key learning outcomes:
To:

- explore the skills of history taking and physical examination within the context of cardiac nursing practice
- have a greater understanding of inspection, palpation, percussion and auscultation in pre-operative assessment of the cardiac patient
- be cognisant of the similarities and different data sources available for the pre-operative ward and intensive care patient

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2nd European Association for Cardio-Thoracic Surgery Guidelines: Perioperative Management of Anticoagulation & Antiplatelet Therapy in Cardiac Surgery

J Dunning[1]; S Nashef[2]
[1]James Cook University Hospital, Middlesbrough, UK; [2]Papworth Hospital, Cambridge, UK

Objectives: The European Association for Cardio-Thoracic Surgery has commenced a process of annual guideline development. The first guideline has now been published and addresses the issues around post-operative atrial fibrillation. The 2nd EACTS guideline seeks to summarise the current best practice for a range of anticoagulation and antiplatelet issues for patients undergoing cardiac surgery.

Methods: EACTS guidelines are unique in the level of interaction and participation that every cardiac surgeon across Europe can have to influence the outcome. Each individual recommendation is supported by a literature review. Many authors from across Europe are assisted in performing these reviews, which are then published in the journal *Interactive Cardiovascular and Thoracic Surgery* as 'Best Evidence Topics'. All surgeons then have 2 months to post comments which, are published with the topic. These topics are then collated into a full guideline document.

Results: The 2nd EACTS guideline brings together 18 'Best Evidence Topics' into a comprehensive guideline that addresses cessation of clopidogrel, warfarin and aspirin prior to surgery, a range of interventions to reduce perioperative bleeding, tests to guide blood product management after surgery, use of factor VIIa, aspirin and warfarin managment after coronary and valve surgery and Low-molecular-weight-heparin post-surgery. The proposed recommendations and the evidence behind them will be discussed in our presentation.

Conclusions: EACTS have initiated a unique way of perfoming guidelines to assist the clinical care of patients undergoing cardiothoracic surgery. Their strength and clinical relevance will come from active participation of EACTS members across Europe in their development.

Electronic Solutions for Blood Transfusion Safety within Cardiothoracic Surgery

D Waters[1]; J Cook[1]; S Hutton[1]; A Davies[2]
[1]Oxford Radcliffe Hospitals NHS Trust, Oxford, UK; [2]National Blood Service, Oxford, UK

Objectives: The administration of blood products within the cardiac surgery setting is a common activity, but is associated with significant risk to the patient.

The Serious Hazards of Transfusion scheme (SHOT, 2004) reports the most frequent serious incident associated with transfusion is misidentification of the patient, with the main contributing factor being human error.

Methods: An end-to-end electronic system has been developed and evaluated for use during the blood transfusion process. Patient safety is optimised by using handheld computers and barcode technology. Staff maintain 'best practice' clinical protocols by following a step-by-step process for blood sample collection and administration. This ensures appropriate checks have been carried out and that the right blood is given to the right patient at the right time.

In addition a computerised self-service fridge was introduced, allowing automated issue and labelling of non-crossmatched blood to be available on demand.

Audit data was gathered pre and post implementation and a staff satisfaction survey was also completed.

Results: Significant improvements were noted in the transfusion process, as well as cost savings. Staff found the system easy to operate and preferred it to conventional procedures. Due to its success, this initiative is currently being implemented throughout the whole Trust.

The Cardiothoracic Advanced Life Support Course: Delivering Significant Improvements In Emergency Cardiothoracic Care

J Dunning[1]; S Ariffin[2]; J Jerstice[2]; D Danitsch[2]; T Strang[3]; A Levine[2]
[1]James Cook University Hospital, Middlesbrough, UK; [2]University Hospital of North Staffordshire, Stoke-on-Trent, UK; [3]Wythenshawe Hospital, Manchester, UK

Objectives: Protocols for the management of patients who suffer an in-hospital cardiac arrest are well established on general medical and surgical wards. However, while cardiac arrest is not uncommon post-cardiac surgery and successful resuscitation is associated with a very favourable outcome, no protocols exist for patients who arrest after cardiac surgery.

Methods: We constructed a series of protocols for the management of patients who are either critically ill or suffer a cardiac arrest post-cardiac surgery.
We then created a 3-day course to teach these protocols. The course consists of practicals using resus mannikins with sternotomies, laptop simulation of critically ill patients, practicals on internal massage, IABP insertion, tracheostomy emergencies, CXR, ECG and blood gas interpretation, external and internal pacing, and also essential lectures. Candidates are required to participate in a wide range of simulated situations.

Results: We have now conducted 8 courses with 122 candidates participating. In addition we have demonstrated significant improvements in times to chest reopening and achievement of definitive life-saving treatment, and published these findings in the *Annals of Thoracic Surgery* and *Nursing Times*. We have also published details of our course in the *BMJ*.

Conclusions: We have successfully created a unique course that addresses the specific needs of cardiothoracic surgery. Our ultimate aim is for all staff-members working in cardiothoracic surgery to have a 'common-language' of protocols and skills for the care of critically ill patients, thus allowing all grades including nurses, nurse practitioners, surgical assistants and medical staff to deliver urgent life saving treatment in emergency situations.

The Development of a Cardiothoracic and Oesophageal Teaching & Assessment Programme for Nurses, Surgical Assistants, Physiotherapists & Allied Health Professionals

M Poullis
Cardiothoracic Centre NHS Trust ; Liverpool; UK

To date, specific cardiothoracic and oesophageal teaching programmes for nurses and non-medics have been sparse to non-existent.
Those that do exist are usually expensive and only available to senior members. With regard to assessment, a large number of nurses and junior doctors participate in the ALERT© course. Unfortunately this course was developed for the general surgical community.

At the Cardiothoracic Centre in Liverpool we have developed a 16-course lecture series, available free on CD ROM, which covers all the basics of cardiothoracic and oesophageal surgery for nurses, surgical assistants, physiotherapists and allied health professionals.
Topics include:

- Anatomy, physiology and pathology of the heart
- Anatomy, physiology and pathology of the lung
- Oesophageal surgery
- Thoracic surgery
- Thoracic surgery complications
- ITU and ward, ward rounds
- Coagulation
- Innovations in thoracic surgery
- Inotropes
- Low BP in cardiac surgery patients
- CABG, coronary anatomy, on and off pump surgery and conduits
- Aneurysms
- ECG interpretation and pacemakers
- Cardiopulmonary bypass/perfusion
- Ventilation
- Epidurals, spinals and paravertebral analgesia.

In addition, we have developed and equivalent to the ALERT© course which is specifically designed for the nurse, surgical assistant, physiotherapist and allied health professional, and junior doctors.
Again, this will be made available free on a CD-ROM.

A Comparative Perspective, The Thoracic Patient Journey. The Surgeon, The Nurse and The Patient

T Fenwick.
Cardiothoracic Critical Care Unit, UHCW Hospitals, Coventry, UK

This presentation aims to give a comparative perspective from the thoracic surgeon, the nurse and the patient. It will identify the key events and issues surrounding the patient's journey and intends to demonstrate the necessary factors for the delivery of high quality care. It stresses the significance of a collaborative approach between healthcare professionals and the patient, ever more important as we address the issues surrounding new ways of working and future of cardiothoracic practice. Moreover, it will invoke a reminder to healthcare professionals of what dominates the patient experience. This presentation hopes to create the foundations of further discussion for delivery of care

Talc Pleurodesis: Doctor Versus Nurse Led Procedure. A prospective, randomised, multi-centre, pilot study

H Munday
Papworth Hospital, Cambridge, UK

Background: The procedure of talc slurry instillation to induce pleurodesis is traditionally undertaken by medical staff. There are inconsistencies with the way in which the procedure is performed which are said to affect the success of the procedure. This pilot study demonstrates that appropriately trained nurses could competently perform the procedure as safely and effectively as doctors. The premise of this work is that patient satisfaction provides a useful and meaningful indicator as to how doctors and nurses undertake this procedure.

Methods: Twenty patients were randomised between Feb–October 2006 from four sites. Primary outcome was patient satisfaction measured by questionnaire. Secondary outcome measures were:
Recurrence of effusion
Complications
Pain and anxiety levels
Workload and professional development.

Results: Eighteen patients were included in the final analysis. Patients in both groups reported they were reassured and had confidence in the person performing the procedure; they were satisfied with the level of care they had received.

Conclusion:
Results to date imply there is no difference in patient satisfaction, or safety and efficacy of nurses undertaking this procedure when compared with doctors. However, the study is limited by small sample size and further recruitment is recommended.

Donor Care Physiologist

A Ingle
Papworth Hospital, Cambridge, UK

Papworth Hospital was one of 19 pilot sites selected by the Department of Health to explore 'new ways of working' in preparation for the reduction in junior doctors' hours introduced as part of the European Working Time Directive in August 2004.

One such new role was that of the Donor Care Physiologist (DCP).

Five trainee DCPs commenced post in September 2003 and completed a 15month-training programme, designed at Papworth and accredited with Homerton College Cambridge, School of Health Studies.

Following successful completion of the training programme, the DCP substituted the Specialist Registrars in Anaesthetics during donor retrieval events, enabling the SpRs to comply with the European Working Time Directive, whilst maintaining the quality of the service provided.

In liaison with the Fellows within Transplantation, the DCP assists with the care and management of organ donors during donor retrieval operations, seeking advice from the donor hospital anaesthetist as necessary. The DCP works closely with the transplant fellows, other members of the donor retrieval team and the clinician's assistants in transplantation, performing key activities with a high degree of clinical skill and knowledge. Audit data of DCP performance against set criteria has demonstrated to date a high level of performance.

The DCPs are a mixture of science graduates and operating department assistants. In April 2006 a second cohort of students commenced the training programme.

Bereavement Support in Critical Care

K Street; P Lawrence; J Hindley
The Cardiothoracic Centre, Liverpool, UK

The way in which bereavement is dealt with has a lasting impact upon the surviving family/friends/carers. Knowledge of the risk factors associated with poor outcome of grief (Sheldon 1998) leading to increased morbidity and mortality has led the Department of Health to suggest that each unit should have an appointed person/group to deal with the bereaved (DOH 2005). The Intensive Care Society recommends that there should be continuity of care for the bereaved (May 1998). Recognising this, a small group of motivated nurses with a keen interest in offering continuing care to the bereaved began a support service in October 2004.

At the time of bereavement, relatives are given a condolence card (inside this is a contact number which they are encouraged to ring any time if they have any questions or concerns). At the same time the family is offered a phone call, whereby one of the support group nurses will phone them after 6–8 weeks, again giving them the chance to ask any unanswered questions.

Auditing this service has shown a high percentage of those who received phone calls reached closure after the first call; others needed to liaise with PALS or Consultants and were directed accordingly. Audit also shows whilst some families decline the follow-up; a number in fact contact the group. The response of the bereaved is overwhelmingly positive to this service.

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Author Index

Organised by:

Society for Cardiothoracic Surgery in Great Britain and Ireland
Graham Cooper – Meeting Secretary
Email: graham.cooper@sth.nhs.uk

Simon Kendall – Deputy Meeting Secretary
Email: Simon.Kendall@stees.nhs.uk

Isabelle Ferner – Society Administrator
Email: sctsadmin@scts.org

Rachel Woolf – Accounts and Exhibition Administrator
Email: admin@scts2.wanadoo.co.uk

Future Meetings

The 2008 meeting is to be held in Edinburgh at the Edinburgh International Conference Centre 9th–12th March.

All best endeavours will be made to present the programme as printed. However, the Society for Cardiothoracic Surgery in Great Britain and Ireland reserves the right to alter or cancel without prior notice any of the arrangements, timetables, plans or other items relating directly or indirectly to the meeting for any cause beyond their reasonable control. The Society for Cardiothoracic Surgery in GB & Ireland is not liable for any loss or inconvenience caused as a result of such alteration. In the event of cancellation of the congress all pre-paid fees will be refunded in full. However, the Society for Cardiothoracic Surgery is not liable for any other loss or inconvenience caused as a result of such cancellation and delegates are therefore advised to take out their own travel insurance and extend their policy for personal possessions as the meeting does not cover individuals against cancellations of bookings or theft or damage of belongings.