VASBI ANNUAL MEETING 2011

PROGRAMME

DATE 29th & 30th September 2011
VENUE Brighton Hilton Metropole, Brighton, UK

WELCOME

Dear Colleagues,

On behalf of council may I extend our warmest welcome to the second annual meeting of the Vascular Access Society of Britain and Ireland. We've all been very busy behind the scenes trying to emulate the success of last years meeting. We hope you'll find this years meeting even more enjoyable.

Since we last met there has been much focus on the financial aspects of dialysis access as payment by results threatens to shake renal funding to its foundations. The most recent national vascular access audit reveals there is still much work to be done!

I am delighted to announce that the younger members of the medical profession are interested in facing these challenges head on. Indeed the junior forum of the Vascular Access Society of Britain and Ireland was established in the last twelve months, guaranteeing a steady stream of future consultants who have an interest in dialysis access.

The medical device and pharmaceutical industry also recognise and support VASBI's activities. It is a great pleasure to see more industrial sponsors at this years meeting. I am sure you will all enjoy the exhibition.

Conferences are a great time to meet up with old friends and make new ones. The annual gala dinner and entertainment will no doubt fuel your enthusiasm for this meeting.

We hope you all enjoy the meeting and look forward to your feedback afterwards

Best wishes,
Steve Powell on behalf of Council

VASBI FACULTY LIST 2011

Professor Prabhir Roy-Chaudhury	University of Cincinatti USA (Division of Nephrology & Hypertension)
Dr Tom Vesely	President - Vascular Access Society of the Americas Interventional Radiologist, St. Louis, Missouri, USA
Mr David Mitchell	Consultant Vascular and Renal Transplant Surgeon Chair, Audit & Quality Improvement Committee, Vascular Society of Great Britain & Ireland
Professor Ian Chetter	Consultant Vascular Surgeon, Hull Royal Infirmary, Hull
Dr Damian Fogarty	Consultant/Senior Lecturer in Renal Medicine Chairman, United Kingdom Renal Registry
Dr Maurizio Gallieni	Nephrology & Dialysis Unit San Carlo Borromeo Hospital Milan Italy
Dr Colin Deane	President of BMUS, Head of the Vascular Laboratory, Kings College Hospital, London
Mr Ben Freedman	Technologist, Vascular Laboratory, Kings College Hospital, London
Dr Peter Littler	Consultant Interventional Radiologist, University Hospital Aintree, Liverpool
Mr Domenico Valenti	Consultant Vascular Surgeon, King's College Hospital, London Chairman of VASBI
Mr Nick Inston	Consultant Transplant Surgeon, Birmingham Secretary of VASBI
Dr Steve Powell	Consultant Interventional Radiologist, Royal Liverpool University Hospital Treasurer of VASBI
Mr Francis Calder	Consultant Transplant Surgeon, Guy's & St Thomas' Hospital, London
Mr Sohail Choksy	Consultant Vascular Surgeon, Colchester General Hospital
Ms Tanyah Ewen	Chief Clinical Vascular Scientist, Peterborough & Stamford Hospitals NHS Foundation Trust
Dr Sarah Lawman	Consultant Nephrologist, Sussex Kidney Centre
Ms Shella Sandoval	Clinical Nurse Specialist Vascular Access, Royal Free Hospital, London
Ms Nikki Cullen	Senior Practitioner in Radiography, Royal Liverpool University, Hospital
Dr Jason Wilkins	Consultant Interventional Radiologist, Kings College NHS Foundation Trust, London
Ms Mihaela Chiribau	Royal Sussex County Hospital
Mr Danilo San Diego	Royal Sussex County Hospital
Ms Sarah Byng	Royal Sussex County Hospital
Mr Max Troxler	Consultant Vascular Surgeon, Leeds Teaching Hospitals
Mr Patrick Pearson	

PROGRAMME - DAY ONE

THURSDAY 29TH SEPTEMBER 2011

08.00 - 09.00	**REGISTRATION**	*(Foyer)*
08.55 - 09.00	**WELCOME & INTRODUCTION**	**Mr Domenico Valenti** *(Main Auditorium - Regency Suite)*
09.00 - 10.30	**PLENARY SESSION 1** • AVF Maturation Failure • Surveillance of access • Surg treatment of access	**CHAIRS: Mr Domenico Valenti & Dr Jason Wilkins** Prof Prabir Roy Chaudhury Dr Steve Powell Mr David Mitchell
10.30 - 11.00	**COFFEE EXHIBITION & POSTERS**	

11.00 - 12.30	**SCIENTIFIC SESSION 1**	**CHAIRS: Dr Sarah Lawson & Mr Francis Calder**
11.00 - 11.10	• Evaluation of Transonic for Vascular Access Surveillance. Azzam Al-Amin, Zia Moinuddin, Lyndsey Rushton, Haytham Al-Khaffaf East Lancashire Healthcare Trust	
11.10 - 11.20	• Early Cannulation FlixeneTM Grafts are valuable in Patients with difficult Vascular Access. Sritharan K, Turner S, Taylor J, Koffman G, Mamode N, Drage M & Calder F. Dept. of Transplant Surgery, Guy's Hospital, London, UK	
11.20 - 11.30	• Comparison of AVF management practice between surgeons with and without a specialist interest in vascular access. Smith GE[1], Porter R[2], Chetter IC[1] [1]Academic Vascular Surgery Unit, Hull Royal Infirmary, [2]Hull & York Medical School University of Hull	
11.30 - 11.40	• Predictors of failed AVF maturation at Vancouver General Hospital. Jennifer Hanko MB BCh, Nadia Zalunardo MD SM, Guiyun Li MD MPH MSc, Jacek Jastrzebski MD Division of Nephrology, University of British Columbia, Vancouver, Canada	
11.40 - 11.50	• Do Arteriovenous Fistulae Cause Complications After Renal Transplantation? Field M, van Dellen D, Oni T, Faulconer R, Tullett K, Krishnan H, Hamsho A, Mellor S, Inston N. Queen Elizabeth Hospital Renal Unit, Birmingham UK	
11.50 - 12.00	• Surgical Thromboembolectomy for the treatment of Occluded Arteriovenous Fistulae - A Single Centres Experience. T Jackson, C Boffa, S Kattenhorn, S Dutta, K Graetz, P Gibbs Wessex Renal and Transplant Service, Queen Alexandra Hospital, Portsmouth	
12.00 - 12.10	• What happens to conservatively managed haemodynamically significant stenoses in arteriovenous fistulas? Beckitt TA, Darwood RJ, Daniel S, Neary WD, Weale AR, Mitchell DC Department of Vascular Surgery, Southmead Hospital North Bristol NHS Trust, Bristol	
12.10 - 12.20	• Arteriovenous Fistula Cannulation And The Impact On Arteriovenous Fistula Survival – The Results of a Randomised Controlled Trial. King J, Lloyd S, Bailey L, Moore J, Naik R, Vaux E Renal Unit, Royal Berkshire NHS Foundation Trust, Reading RG1 5AN	

12.30 - 1.30	**LUNCH EXHIBITION & POSTERS**	
13.30 - 15.00	**WORKSHOP PROGRAMME** *(sign up for 3)* 1. Ultrasound/Mapping 2. INT Balloon Catheters/Thrombectomy 3. Access Surgery 4. Surgical - Steel/Aneurysms 5. Complex Catheters 6. Quality Dialysis and the Fistula	**30 minute programme repeating 3 times** Ms N Cullen, Ms T Ewen, Mr B Freedman & Mr C Deane Dr Peter Littler & Dr Jason Wilkins Mr Sohail Choksy & Mr David Mitchell Mr Domenio Valenti & Prof Ian Chetter Dr Steve Powell & Dr Tom Vesley Ms Mihaela Chiribau/Mr Danilo San Diego
15.00 - 15.30	**COFFEE EXHIBITION & POSTERS**	
15.30 - 17.00	**COMPLEX CASE SESSION** The North South Divide Team A (North): Dr Steven Powell, Professor Prabhir Roy Chaudhury, Mr Max Troxler Team B (South): Dr Jason Wilkins, Mr Domenico Valenti, Dr Sarah Lawman	**CHAIR: Dr Peter Littler**
19.15	**PRE DINNER DRINKS**	*(Ambassador / Sandringham Suite)*
20.00	**VASBI 2011 ANNUAL DINNER**	*(Main Auditorium - Regency Suite)*

PROGRAMME - DAY TWO

09.00 -10.30	**PLENARY SESSION 2: NEW HORIZONS** • Medico-legal aspects of access • Latest devices - great or grating • Interventions for stenosis: Myth or Reality	**CHAIRS: Mr Nick Inston & Dr Jason Wilkins** Dr M Gallieni Dr Tom Vesely Prof Prabir Roy Chaudhury
10.30 - 11.00	**COFFEE EXHIBITION & POSTERS**	
11.00 - 12.30	**PLENARY SESSION 3** • The impact of PBR • The renal registry	**CHAIRS: Dr Alison Severn & Dr Steve Powell** Dr Sarah Lawman & Mr Nick Inston Dr Damian Fogarty
12.30 - 13.30	**LUNCH EXHIBITION & POSTERS**	
13.30 -14.30	**PLENARY SESSION 4** • Paediatric access • Quality of Life	**CHAIR: Ms Shella Sandoval** Mr Francis Calder Ms Sarah Byng & Mr Patrick Pearson
	VASBI SOCIETY REPORT	**Mr Nick Inston & Dr Steve Powell**

14.30 - 15.30	**SCIENTIFIC SESSION 2**	**CHAIRS: Mr Sohail Choksy & Mr Domenico Valenti**
14.30 - 14.40	• Vascular access in a district general hospital renal unit: A 10 year experience E. Vaux[1], J.Moore[1], M. Gibson[2], M. Kanniapan[2], S. Lloyd[2], G. Downs[2], L. Bailey[2], R. Naik[1] [1]Department Renal medicine and [2]Department Radiology, Royal Berkshire NHS Foundation Trust	
14.40 - 14.50	• The role of MDCT Fistulography as a problem solving tool in the evaluation of dysfunctional haemodialysis fistulas Mehrzad H, Willis A, Jones R Dept of Radiology, Queen Elizabeth University Hospital, Birmingham, UK.	
14.50 - 15.00	• The Adductor Loop Arteriovenous Graft – An alternative technique in vascular access surgery JA Gilbert[1] & PJ Gibbs [1]Oxford Transplant Centre, Churchill Hospital, Oxford [2]Wessex Renal & Transplant Service, Queen Alexandra Hospital, Portsmouth	
15.00 - 15.10	• Single stage vs two Staged Basilic Vein Transposition Arteriovenous Fistula Formation Ahmed Farghaly Renal Transplant, Renal Department, Barts and the London NHS trust.	
15.10 - 15.20	• Stent grafts versus bare metal stents in stenotic arteriovenous fistula disease Carroll M[1], Shaikh U[1], Cullen N[1], Littler P[2] and Powell S[1] [1]Royal Liverpool and Broadgreen University Hospital NHS Trust. [2]University Hospital Aintree NHS Trust.	
15.20 - 15.30	• Survey of haemodialysis patients to determine reasons for refusal of arteriovenous fistulas. S Onida, C Stewart, R Harvey, I Ahmed, M Caruana, M Salman, SW Yusuf, K El-Sakka Vascular Surgery Department, Brighton and Sussex University Hospitals NHS Trust.	
15.30 - 15.40	• Does Regional compared to Local Anaesthesia influence [illegible] fistula creation? R. Zaliuna [1]Dept of [illegible]	W I T H D R A W N
15.40 - 15.50	• How to increase the use of the Buttonhole Technique for needling arteriovenous fistulas N. Cole, A. Cole, S. Lawman Sussex Kidney Unit, Brighton and Sussex University Hospitals NHS Trust, Brighton.	

15.30 - 16.00	**PRIZE GIVING & CLOSE OF MEETING**	**CHAIR: Mr Domenico Valenti**

CPD UNDER APPLICATION

POSTERS LIST

1. **ROLE OF ENDOVASCULAR INTERVENTIONS IN ACHIEVING ACCESS GOALS: DEMAND AND OUTCOMES**
   Usamah Taylor[1], Milind Nikam[1/2], Nicholas Chalmers[2]
   [1]University of Manchester, [2]Manchester Royal Infirmary – Central Manchester Foundation Trust

2. **CAN WE PREVENT STEAL SYNDROME IN DIALYSIS PATIENTS? 10 YEARS EXPERIENCE WITH THE EXTENSION TECHNIQUE**
   Kambalia, H, Al-khaffaf
   Vascular unit, East Lancashire hospitals NHS trust, Blackburn, UK

3. **THE MANAGEMENT OF DIALYSIS ACCESS ASSOCIATED STEAL SYNDROME WITH THE EXTENSION TECHNIQUE - 10 YEAR EXPERIENCE**
   H. Al-khaffaf
   Vascular unit, East Lancashire hospitals NHS trust, Blackburn, UK

5. **DOES TRIBUTARY LIGATION WORK?**
   Aly MK MBBCh, Brownlie N, Sinnamon K, Cserep G, Choksy SA MD FRCS
   Depts of Surgery and Nephrology, Colchester General Hospital

6. **AN EGFR VALUE TO CREATE VASCULAR ACCESS FOR HAEMODIALYSIS (HD) AND THE RATE OF DECLINE IN EGFR IN PATIENTS WITH CHRONIC KIDNEY DISEASE.**
   Robert Bartlett, Bhavna Pandya.
   University Hospital Aintree, Liverpool, UK.

7. **DRUG ELUTING STENT USAGE IN RECURRENT ARTERIOVENOUS FISTULAE STENOSIS - A CASE SERIES.**
   Shaikh U, Hall R, Powell S.
   Royal Liverpool and Broadgreen and University Hospital NHS Trust

9. **A "CHRISTMAS TREE" BAND FOR THE TREATMENT OF ARTERIOVENOUS DIALYSIS ACCESS RELATED STEAL SYNDROME**
   Smith GE[1], Kuhan G[2], Chetter IC[1]
   [1]Academic Vascular Surgery Unit, Alderson House, Hull Royal Infirmary, [2]Vascular Sugical unit Aberdeen Royal Infimrary

11. **PRIMARY NON-SYNTHETIC ARTERIO VENOUS FISTULA (AVF) FOR LONG TERM VENOUS ACCESS: ARE PROXIMAL AVF (PAVF) ACCESS PROCEDURES SUPERIOR TO DISTAL AVF (DAVF) ACCESS INTERVENTIONS IN PATIENTS ON HAEMODIALYSIS (HD) PROGRAMME?**
    N Hamada, S Sultan, W Tawfick
    Galway University Hospital

12. **ULTRASOUND VASCULAR MAPPING PRIOR RO AVF CREATION: TWO CASES ILLUSTRATING PROCESS AND BENEFITS BEYOND CHOOSING 'BEST VESSELS'**
    Jennifer Hanko MB BCh, Nadia Zalunardo MD SM, Jacek Jastrzebski MD
    Division of Nephrology, University of British Columbia, Vancouver, Canada

15. **ANGIOPLASTY OF ANASTOMOTIC STENOSES IN DIALYSIS NATIVE FISTULAE AND SYNTHETIC GRAFTS**
    Dr K Waters, Dr M Glasby
    Leicester Royal Infirmary, Infirmary Square, Leicester

16. **ARTERIOVENOUS DIALYSIS FISTULA THROMBOSIS VENOPLASTY: RESULTS OF A LARGE UK TERTIARY REFERRAL REN**
    W I T H D R A W N
    Stephenson JA, Pattenden C, Waters K, Bruce D, Fishwick G, Adair W, Glasby M
    Department of Radiology, University Hospitals of Leicester

18. **RETROSPECTIVE SURVEY OF VASCULAR ACCESS PROVISION FOR PATIENTS STARTING HAEMODIALYSIS AT BIRMINGHAM HEARTLANDS HOSPITAL IN 2009 - 2010**
    Sara Hanifa Rizvi and Jyoti Baharani
    Department of Renal Medicine, Birmingham Heartlands Hospital, Heart of England Foundation Trust

22. DIALYSIS NURSE SURVEY ON ELEVATED INSITU VS. TUNNELLED TECHNIQUES FOR BRACHIOBASILIC ARTERIOVENOUS ACCESS.
C.Stewart, S.Onida, I.Ahmed, R.Harvey, M. Caruana, SW Yusuf, K ELSakka
Vascular Surgery Department, Brighton and Sussex university hospitals

24. STAFF SATISFACTION WITH BUTTONHOLE CANNULATION TECHNIQUE FOR HAEMODIALYSIS PATIENTS – THE KEY TO SUCCESS?
Manook M, Sandoval S, Lindsey B.
Royal Free Hampstead NHS Trust, Pond Street, London

25. REGIONAL ANAESTHESIA (RA) IN HAEMODIALYSIS PATIENTS UNDERGOING COMPLEX ARTERIO-VENOUS (AV) FISTULA SURGERY
Batra R[1], Rajendram[2], Lindsey B[1], Joseph A[2]
[1]Departments of Renal Transplant Surgery and [2]Anaesthesia Royal Free Hospital, London

26. REMODELLING VASCULAR ACCESS SALVAGE SURGERY:- A NOVEL APPROACH FOR RECONSTRUCTING COMPLEX ANEURYSMAL FISTULAE
Omar Masood, Afshin Tavakoli
Department Of Transplant Surgery, Manchester Royal Infirmary, Manchester

27. A MULTIDISCIPLINARY APPROACH TO ATTAINING EXCELLENCE IN DIALYSIS VASCULAR ACCESS
Joyce Leary[1], Anne Buchanan[1],Carmel Kilpatrick[1], Leonie McCaffery[1], Peter Garrett[1], Pavol Svrcek[1], Zola Mzimba2, Mark Grennell[2], Micheal Quinn[1]
[1]Tyrone County Dialysis Unit; [2]Vascular Surgery Department, Western Trust Northern Ireland

29. BUTTONHOLE TECHNIQUE: A MULTI-CENTRE STUDY OF PATIENT EXPERIENCE
Ramesh Batra, Shella Sandoval, Ben Lindsey, Bimbi Fernando
Renal Transplant Unit, Royal Free Hospital London

30. HOW TO DESIGN A NURSE-LED VASCULAR ACCESS SERVICE
Dav
W I T H D R A W N
Renal Unit, Morriston Hospital, Swansea, Abertawe Bro Morgannwg University Health Board.

31. DELIVERING VASCULAR AND PERITONEAL DIALYSIS ACCESS SURGERY TO RENAL FAILURE PATIENTS IS LOGISTICALLY CHALLENGING.
K Tagge, M Manook, L Evans, B Lindsey, B Fernando
Renal Transplant Unit, Royal Free Hospital London

33. PERCUTANEOUS ANGIOPLASTY(PA) FOR NATIVE AV FISTULA-DOES SITE OF LESION MATTER?
Ramesh Batra, Ben Lindsey, Miriam Manook, Anthony Goode, Bimbi Fernando, Niroshan Seneviratne
Renal Transplant Unit, Royal Free Hospital London

35. STEAL SYNDROME: IS THERE A ROLE FOR BANDING?
John M O'Callaghan, Sanjay Sinha, Isabel Quiroga, Jeremy Perkins, Christopher Darby, James Gilbert
Oxford Transplant Centre, Churchill Hospital, Oxford

37. VASCULAR ACCESS OUTCOMES IN HIV-POSITIVE PATIENTS
Rhiannon Lifford Hiren Mistry, Mark Tyrrell Domenico Valenti
King's College Hospital, London, UK

40. IMPACT OF FISTULA ANGIOPLASTY ON DIALYSIS FUNCTION
McMahon R, Coles RA, Ross R, Chakraverty S, Bhat R, Severn A, Moir C, Howd A, Nagy J, Griffiths GD.
Ninewells Hospital and Medical School, Dundee and Queen Margaret Hospital Dunfermline, UK.

41 ARE BRAIN NATRIURETIC PEPTIDE LEVELS RELATED TO FLOW THROUGH AUTOLOGOUS ARTERIO-VENOUS FISTULA FOR CHRONIC HAEMODIALYSIS?
Guthrie G, Suttie SA, Ross R, Levison R, Stonebridge P
East of Scotland Vascular Network: Department of Vascular Surgery, Ninewells Hospital and Medical School, Dundee, UK

POSTERS LIST

42. PRESENCE OF SPIRAL LAMINAR FLOW IN AUTOLOGOUS ARTERIO-VENOUS FISTULAE
Guthrie G, Suttie SA, Ross R, Levison R, Stonebridge P
East of Scotland Vascular Network : Department of Vascular Surgery, Ninewells Hospital and Medical School, Dundee, UK

43. NATURAL HISTORY OF UPPER LIMB ARTERIO-VENOUS FISTULAE FOR CHRONIC HAEMODIALYSIS
Henderson N, Suttie SA, Ponnuvelu G, Vint R, Ross R, Tootil R, Howd A, Nagy J, Griffiths GD
East of Scotland Vascular Network : Department of Vascular Surgery, Ninewells Hospital and Medical School, Dundee, UK

44. AXILLARY TO EXTERNAL ILIAC VEIN BYPASS FOR TREATMENT OF CENTRAL VENOUS OBSTRUCTION IN A PATIENT RECEIVING DIALYSIS
Abboudi H, Chandak P, Chemla ES
St George's Hospital London

EVALUATION OF TRANSONIC FOR VASCULAR ACCESS SURVEILLANCE

Azzam Al-Amin, Zia Moinuddin, Lyndsey Rushton, Haytham Al-Khaffaf
East Lancashire Healthcare Trust

Aims: To calculate the positive predictive value of transonic surveillance technique and therefore evaluate its efficacy in detecting arterio-venous fistula (AV) stenosis

Methods: A retrospective analysis of prospectively collected data was carried out. Patient data from 2008 to present of adult renal dialysis patients with AV fistulas was retrieved from the databases of the renal units of East Lancashire Healthcare Trust. Patients with abnormal flow and recirculation readings were identified. Abnormal values were defined as access flow <500ml/min, presence of recirculation and/or more than 25% reduction in consecutive readings (according to KDOQI guidelines). These patients subsequently underwent Doppler ultrasound scan assessments and/or fistulogram.

Results: 227 patients with AV fistulas were analysed (140 males and 87 females). 42 out of 227 patients (18.5%) had abnormal transonic readings and were investigated with either duplex ultrasound scan, fistulogram or both. Of those, 28 were correctly identified as having an AV fistula stenosis or related abnormalities on subsequent investigations. The positive predictive value for transonic readings was therefore 66.7%.

Conclusion: Transonic surveillance is reliable. Further research is required to calculate the sensitivity of this method.

EARLY CANNULATION FLIXENETM GRAFTS ARE VALUABLE IN PATIENTS WITH DIFFICULT VASCULAR ACCESS

Sritharan K, Turner S, Taylor J, Koffman G, Mamode N, Drage M & Calder F.
Dept. of Transplant Surgery, Guy's Hospital, London, UK

Purpose: FlixeneTM grafts can be cannulated immediately following implantation, and their placement is advocated in patients where vascular access is difficult or suitable native vein is lacking. This study evaluated the effectiveness of FlixeneTM grafts as an early cannulation graft.

Materials & Methods: Ninety-five FlixeneTM grafts were placed in 80 consecutive patients, over a 30 month period at a single London hospital. No patients were excluded. Demographic data, number of previous fistulae created, timing of first needling following graft placement, and primary endpoints of graft patency and complications were recorded prospectively.

Results: Forty-eight women (60%) and 32 men (40%), mean age 56.5 years (range 23-86 years), were recruited. Sixty-five brachio-axillary (68%), 6 brachio-cephalic (6.3%), 11 brachio-basilic (12%), 2 brachio-subclavian (2%) and 8 (8.4%) leg grafts were fashioned.

Seventy per cent of patients had ≥2 previous attempts at AVF creation. Mean time from graft placement to needling was 4.6 days (range 0-19 days). Primary graft patency was 60.5% at 6 months, and 42.2% at one year. Sixty-two grafts (65%) failed over the investigation period. Nine grafts (9.5%) became infected and required excision; 6 grafts (6.3%) developed graft-vein stenosis, 41 grafts (43%) thrombosed, and 2 grafts (2.1%) developed peri-graft haematomas following needling. Secondary patency rate at 6 months was 60.7%.

Conclusion: FlixeneTM grafts are valuable in patients with difficult vascular access. Patency rates are acceptable and early cannulation may circumvent the need for temporary vascular catheter insertion with their associated morbidity.

ABSTRACTS - SESSION 1

COMPARISON OF AVF MANAGEMENT PRACTICE BETWEEN SURGEONS WITH AND WITHOUT A SPECIALIST INTEREST IN VASCULAR ACCESS

Authors: Smith GE[1], Porter R[2], Chetter IC[1]
Departments: [1]Academic Vascular Surgery Unit, Hull Royal Infirmary, [2]Hull and York Medical School, University of Hull

Purpose: There is increasing interest in vascular access surgery in the UK. We aimed to determine whether practice differs between UK surgeons managing access who have a specialist interest in access and those who do not.

Methods and materials: We surveyed the British Transplant Society, the Vascular Surgery Society and the Rouleaux Club members and compared responses from those reporting a special interest in access (SIA) to those with no special interest (NSI).

Results: 224 UK surgeons responded of which 114 stated that they had a special interest in vascular access (85/155 Consultants, 29/69 trainees). Totals shown in table 1 were lower where surgeons failed to complete the whole questionnaire.

	SIA	NSI	P
Routine use of ultrasound mapping	86/111	22/50	P<0.001 SIA>NSI
Formal vein preservation advice/policy	30/114	5/110	P<0.001 SIA>NSI
Prescribe adjuvant drug therapy	63/114	29/110	P<0.001 SIA>NSI
Offer appointment after surgery	29/114	9/110	P=0.001 SIA>NSI
Perform surveillance	67/114	23/110	P<0.001 SIA>NSI
More than 1 form of surveillance	26/111	8/110	P=0.001 SIA>NSI

Table 1: Reported incidences of practices related to fistula formation or maintenance

Conclusion: SIA surgeons were more likely to use routine vessel mapping, vein preservation prior to surgery, review patients themselves after surgery and use fistula surveillance, and to prescribe adjuvant therapy for fistula maintenance. There was also a non significant trend towards SIA surgeons being more likely to perform their own pre operative ultrasounds. SIA surgeons practice is significantly different from that of other surgeons forming and managing vascular access.

PREDICTORS OF FAILED AVF MATURATION AT VANCOUVER GENERAL HOSPITAL

Jennifer Hanko MB BCh, Nadia Zalunardo MD SM, Guiyun Li MD MPH MSc, Jacek Jastrzebski MD
Division of Nephrology, University of British Columbia, Vancouver, Canada

Purpose: High 'failure to mature' (FTM) rate is a major barrier to increasing arteriovenous fistula (AVF) prevalence. The objectives of this study were to determine the predictors of AVF FTM in our population and to determine the utility of an existing clinical predictive model (Lok et al, JASN 2006).

Methods: All first AVF creations from January 1, 2005 to December 31, 2009 were included and followed until August 31, 2010. AVF failures within 14 days of surgery were excluded. For comparison with the Lok prediction model, we further excluded AVFs first used more than 6 months after creation. Logistic regression was used to determine predictors of FTM.

Results: There were 264 AVFs included. The mean patient age was 63.3 years, 64.7% male, 48.9% white, 49.6% diabetes, 20.8% ischaemic heart disease (IHD), 9.1% peripheral vascular disease (PVD), 12.9% cerebrovascular disease, 32.5% current/previous smokers, and 22.7% BMI ≥30. AVFs were placed on the left in 81.4%; 3.8% brachiobasilic (BB), 35.2% brachiocephalic (BC), and 61.0% radiocephalic (RC).

FTM occurred in 36.0%, with no change over time. Significant predictors of FTM in multivariable analysis included: diabetes (OR: 1.92; 95% CI: 1.07-3.46), current/previous smoking (OR: 2.32; 95% CI: 1.24-4.34), male gender (OR: 0.52; 95% CI: 0.28-0.98), and fistula type (BB compared to RC: OR 2.7 with 95% CI: 1.01 – 7.47; BC compared to RC: OR 0.43 with 95% CI: 0.23-0.80). Right sided AVFs, non-white race, IHD, and PVD had a nonsignificantly increased risk of FTM.

The Lok score was only predictive of FTM in the 'very high' risk (Lok score >=8) patient group and not in the lower risk groups (P = 0.27).

Conclusion: AVF FTM occurred in about one third of first AVF creations. The predictors of increased risk of FTM were diabetes, smoking history, and female gender. Brachiocephalic AVFs were less likely to fail than other types. Application of an existing predictive model was of limited utility in identifying those at low versus moderate/high risk of failure in our population.

DO ARTERIOVENOUS FISTULAE CAUSE COMPLICATIONS AFTER RENAL TRANSPLANTATION?

Field M, van Dellen D, Oni T, Faulconer R, Tullett K, Krishnan H, Hamsho A, Mellor S, Inston N.
Queen Elizabeth Hospital Renal Unit, Birmingham UK.

Purpose: Following successful renal transplantation it has been suggested that arteriovenous fistulas should be ligated to prevent future complications and potentially deleterious effects on cardiac function. The aim of this study was to ascertain the incidence of complications in arteriovenous fistulas following renal transplantation within our population.

Materials and Methods: Patients who underwent renal transplantation between January 2006 and December 2010 and who were on haemodialysis at the time of transplantation were identified. Patients who developed complications in relation to their fistula were identified from notes, electronic imaging records and via the vascular access records.

Results: 281 transplant recipients were identified (average follow up 30 months, range 6-60). 2 patients developed ischaemic steal (0.7%), 3 patients developed aneurysms of their fistulas (1%) and 8 patients developed unilateral arm swelling (3%). Mean time to the development of steal post transplant was 28 days (range 6-50 days), to aneurysm development was 763 days (range 176-1250) and to arm swelling was 387 days (range 4-1082). The majority of complications occurred in brachiocephalic fistulas (73%). Treatment options included ligation (64%), radiological management (27%) and conservative (9%).

Conclusions: Whilst it is difficult to quantify the effect of a patent fistula on cardiac function in our population the risk of developing a complication from the fistula remains very small. Given the inherent risk of a return to dialysis and the low rate of complications post-transplant we feel it would be imprudent to ligate all fistulas and lose such a valuable resource.

ABSTRACTS - SESSION 1

SURGICAL THROMBOEMBOLECTOMY FOR THE TREATMENT OF OCCLUDED ARTERIOVENOUS FISTULAE - A SINGLE CENTRES EXPERIENCE

T Jackson, C Boffa, S Kattenhorn, S Dutta, K Graetz, P Gibbs
Wessex Renal and Transplant Service, Queen Alexandra Hospital, Portsmouth

Introduction: It is recommended that all patients should dialyse on an arteriovenous fistula (AVF). This is ideally autologous vein, but grafts are used when appropriate. Avoidance of central venous dialysis catheters reduces infection risks and central stenosis, and improves dialysis quality. Our institution has an aggressive policy to surgically salvage thrombosed AVFs using a combination of open thromboembolectomy and patch plasty. This contrasts with trends towards endovascular techniques. This is a review of our outcomes.

Methods: A Retrospective notes review of all surgically treated thrombosed AVFs between 1st January 2009 and 30th January 2011 was performed. There were 10 radiocephalic, 20 brachiocephalic, 7 Brachio-basilic transposition fistulae and 22 PTFE grafts. Initial, 6 week and 6 month outcomes were studied. All patients had a fistulogram after surgery, 13 also required fistuloplasty.

Results: Sixty-one patients underwent surgical thromboembolectomy in the 25 month time-frame. Of those, 97% were initially successful. 25 cases had simple thromboembolectomy and 35 had thromboembolectomy with patch plasty. At 6 weeks 48 were working (81%) and at 6 months 43 were working (73%). Between 6 weeks and 6 months, five patients underwent further intervention on their AVF. One had a patch plasty, and four had further surgical thromboembolectomies. There was one wound infection following primary thromboembolectomy, and one death caused by a CVA.

Conclusion: This study demonstrates that primary thromboembolectomy gives excellent initial fistula function with a low complication rate, and is maintained at 6 months. It is therefore a safe and effective way of managing thrombosed AVFs.

WHAT HAPPENS TO CONSERVATIVELY MANAGED HAEMODYNAMICALLY SIGNIFICANT STENOSES IN ARTERIOVENOUS FISTULAS?

Beckitt TA, Darwood RJ, Daniel S, Neary WD, Weale AR, Mitchell DC
Department of Vascular Surgery, Southmead Hospital, North Bristol NHS Trust, Bristol

Purpose: The outcome of haemodynamically significant stenoses within arteriovenous fistulas where fistula outflow is preserved is not well described. In this study we aimed to establish if a policy of duplex ultrasound surveillance was safe for haemodynamically significant stenoses within fistulas where fistula outflow was >600mls/min.

Materials and methods: In this retrospective study we identified conservatively managed patients with fistula stenoses from the renal PROTON and radiology CRIS databases. Stenoses were divided into two groups for comparison of 50-70% and >70% stenosis. Subjects were followed until fistula failure or to date and outcomes recorded included time to endovascular intervention or failure.

Results: 78 subjects with significant stenoses and an outflow of >600ml/min were placed on surveillance between February 2008 and January 2011. The median interval between surveillance duplexes was 3 months (97 days) and the median total follow-up in this series was 368 days. 37 (47%) stenoses were graded at 50-70% and 41 (53%) at >70%. 40 (50.6%) of these fistulae went on to require endovascular intervention as a result of reducing flow rates at a median interval of 163 days. The intervention rates were comparable for stenoses of both 50-70% and >70% at 51% and 56% respectively. There were 2 (2.6%) access occlusions in this series, both with conservatively managed stenoses graded at 50-70%.

Conclusion: This study suggests that haemodynamically significant stenoses within arteriovenous fistulas can be safely managed conservatively provided that flow rates exceed 600mls/min.

ARTERIOVENOUS FISTULA CANNULATION AND THE IMPACT ON ARTERIOVENOUS FISTULA SURVIVAL – THE RESULTS OF A RANDOMISED CONTROLLED TRIAL

Authors King J, Lloyd S, Bailey L, Moore J, Naik R, Vaux E
Renal Unit, Royal Berkshire NHS Foundation Trust, Reading RG1 5AN

Aim: How the arteriovenous (AVF) is needled is an important consideration in AVF survival; the ideal cannulation technique has not been established to date. In this randomised clinical trial (UKCRN ID 4967) we aimed to determine best needling practice.

Method: We conducted a prospective randomised single centre trial randomly assigning 140 patients undergoing maintenance HD to normal (different site) practice (NP) or buttonhole (BH) (constant site) cannulation of their AVF for 12 months. Patients with existing and new AVF were included in the study. The primary outcome was AVF survival. Secondary outcome was technique complication rate.

Results: Demographic data was similar for both groups. At 12 months, the primary endpoint was statistically significant (100% AVF survival in BH group versus 86% normal practice (p=0.012)). 1 year primary patency was 74% BH versus 49% in NP group, p=0.018 (includes existing and new AVF). In the BH group there were significantly less interventions (11 fistulaplasties in BH versus 25 NP, p=0.001) and lignocaine use (p=0.001). There were no bacteraemias in BH group and 2 in NP (0.09/1000 AVF days); there were 2 (culture negative) exit site infections in BH group (0.12/1000 AVF days) and none in NP. There was no significant difference in bleeding times.

Conclusion: In this study AVF survival was improved with BH cannulation which appears to reduce need for interventions. Concerns of increased infection rates or prolonged bleeding times with the BH technique were not seen in this study. The buttonhole technique should be considered as the cannulation technique of choice for the majority of haemodialysis patients.

ABSTRACTS - SESSION 2

VASCULAR ACCESS IN A DISTRICT GENERAL HOSPITAL RENAL UNIT: A 10 YEAR EXPERIENCE

Authors: E. Vaux[1], J.Moore[1], M. Gibson[2], M. Kanniapan[2], S. Lloyd[2], Downs, G[2], Bailey L[2], R. Naik[1]
[1]Department Renal medicine, [2]Department Radiology Royal Berkshire NHS Foundation Trust

Purpose: Continuous audit of our vascular access experience against Renal Association (RA) standards and published practice

Method: A retrospective (2003-2000) and prospective (2004-2009) review of patient PROTON electronic records

Results: The haemodialysis (HD) population increased from 66 patients in 2000 to 264 by 2009. Our 10 year experience is summarised in Table 1. Despite the number starting dialysis with a functioning arteriovenous fistula (AVF) not changing, the % stock HD population with a functioning AVF has risen from 39% in 2000 to 76% in 2009 (to 78% in 2010) against the RA standard 80%.

Table 1

#		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	ALL
HD Stock (number)		66	83	101	147	172	180	213	229	256	264	
HD take on/year (number)		32	48	48	83	73	93	104	87	119	80	
% start HD with AVF	ALL	17	22	27	21	30	28	24	26	30	36	
	Known to us > 3 mths				50	33	50	43	54	50	53	
% Stock with AVF		**39**			**50**	**50**	**60**	**65**	**72**	**74**	**76**	
Number new AVF/year		31	33	53	88	80	65	124	121	124	91	
Number AVF required intervention pre-use						2	2	13	14	17	12	
Plasty rate/new access year $		0	0.07	0	0.19	0.34	0.36	0.42	0.46	0.61	0.57	
% functional AVF subsequently clotted		37	22	38	44	23	20	12	14	4	2	
1 yr primary patency (new access) *		77	81	88	77	76	62	61	65	65	88	69
All (not censored)		62	71	65	61	57	48	50	53	55	75	55
1 yr primary assisted *		83	85	88	79	83	79	86	85	84	88	82
All (not censored)												68
1 yr functional patency*		93	95	96	86	79	68	68	66	68	94	

Patency definitions: Sidawy et al J Vasc Surgery 2002 35 (3)
#1999-2002 – likely incomplete data set
$ plasty rate for new access patency (that year and subsequently)
** censored for death/transplant/transferred out with a functioning fistula (excludes failed attempts on table)*

Conclusion: Establishment of a consultant nephrologist vascular lead in 2003/4, appointment of a vascular access nurse in 2006, introduction of regular monitoring of access with Transonic QC ™ in 2006 in parallel with a significant increase in radiological intervention to maintain AVF patency have all contributed to our rise in HD stock AVF in the face of a rapidly expanding HD population. Time of referral to creation of AVF has reduced significantly but disappointingly % starting HD with a functioning AVF has not risen. Our efforts are now concentrated on timely referral for access and understanding reasons for the rise in new AVF requiring intervention prior to achieving functional patency (primarily anastamotic stenosis).

THE ROLE OF MDCT FISTULOGRAPHY AS A PROBLEM SOLVING TOOL IN THE EVALUATION OF DYSFUNCTIONAL HAEMODIALYSIS FISTULAS

Mehrzad H, Willis A, Jones R.
IR department, Queen Elizabeth University Hospital Birmingham. UK.

Aims: Stenosis and subsequent thrombosis cause a significant number of failures of surgically created arteriovenous fistula for haemodialysis. Digital subtraction angiography (DSA) is the first line investigation of choice for detecting and grading stenosis prior to surgical or percutaneous intervention. However, occasional failure to depict the juxta-anastomostic venous segment and the arteriovenous anastomosis due to incomplete retrograde filling is a pitfall of DSA. This review demonstrates the effective use of MDCT as a problem solving tool in further evaluation of patients with non-diagnostic DSA, therefore avoiding more invasive diagnostic studies.

Materials and Methods: We performed a literature review of the use of MDCT in the evaluation of dysfunctional haemodialysis fistulas, focusing on its advantages and limitations. We illustrate our institutional experience using MDCT as a problem solving tool for patients with non-diagnostic DSA.

Results: Limited studies have shown that MDCT has a role in the evaluation of dysfunctional fistulas especially in the setting of non-diagnostic DSA. This is supported by a case series from our own institution with illustrations included in this review which highlight important teaching points.

Conclusion: In our experience, MDCT has an important role as a problem solving tool in the evaluation of dysfunctional fistulas in patients with non-diagnostic DSA, allowing planning of appropriate percutaenous intervention. We declare no competing interests.

THE ADDUCTOR LOOP ARTERIOVENOUS GRAFT – AN ALTERNATIVE TECHNIQUE IN VASCULAR ACCESS SURGERY

JA Gilbert[1] & PJ Gibbs[2]
[1]Oxford Transplant Centre, Churchill Hospital, Oxford
[2]Wessex Renal & Transplant Service, Queen Alexandra Hospital, Portsmouth

Introduction: Definitive vascular access for haemodialysis remains a key requisite for treating patients with end-stage renal failure (ESRF). Autologous vein arteriovenous fistulae (AVF) remain the vascular access of choice in patients who require long-term haemodialysis. Many patients exhaust all autologous vein options and require a prosthetic graft. We have modified the arteriovenous groin loop procedure and present a technique associated with good patency rates and low infection rates.

Methods: We describe an alternative femoro-femoral arteriovenous loop technique that utilises the mid-thigh sub-sartorial Superficial Femoral Artery and Femoral Vein. Our technique exclusively uses a 6mm diameter, 40cm long Bard PTFE VenafloTM graft that is placed in a transverse loop position in the superficial fat just beneath the skin.

We performed a retrospective analysis of all such cases performed in our unit to date and analysed both the patency and infection rates associated with the technique.

Results: 22 cases have been performed with a median follow up of 16 months. The median time to needling was 25 days. The primary and secondary patency rates at one year were 66.7% and 93.3% respectively. The overall infection rate was only 12.5%.

Conclusions: Our technique is associated with good patency rates and low infection rates. In addition it preserves patient modesty whilst on dialysis and preserves the lymph node bearing tissues in the groin and the groin vessels for further vascular access surgery.

ABSTRACTS - SESSION 2

SINGLE STAGE VS TWO STAGED BASILIC VEIN TRANSPOSITION ARTERIOVENOUS FISTULA FORMATION

Ahmed Farghaly
Renal Transplant, Renal Department, Barts and the London NHS trust.

Background: The need for reliable, long term haemodialysis vascular access remains critical. An arteriovenous Fistula (AVF) is the preferred vascular access for haemodialysis, offering lower morbidity, mortality and cost compared with the grafts or catheters. Upper arm basilic vein transposition (BVT) is becoming more widely accepted, with good outcome compared with arteriovenous graft. Wherein, BVT is often used in patients with difficult access and patients that have lost all superficial veins.

Objectives: The aim of this study was to compare between single stage and two staged basilic vein transposition AVF in regards of immediate success, over all patency rate and complications.

Methods: 30 patients from May 2009 till January 2010, underwent Basilic AVF creation and were divided into two groups (15 each) had BVT-AVF formation Group A had a single stage procedure while Group B had it on 2 stages depending on the size of the basilica vein on pre-op duplex. Data were prospectively collected for each group. Patients were followed up by closely monitoring in the haemodialysis until Jan 2011.

Results: Mean diameter of the basilica vein in Group A was 3.6mm while it was 3.1 mm in Group B.
Immediate post operative failure occurred in 3 patients from Group A (20%) while it occurred in 5 patients (33.3%).
The Overall patency in Group A was 100% in 6 months and dropped to 83.7% in 1 year.
While in Group B the overall patency was 88.9% in 6 months and 77.8 % in 1 year.

Conclusion: Provided good calibre of the Basilic vein, single stage basilic AV fistula shows better success and overall patency rate.

STENT GRAFTS VERSUS BARE METAL STENTS IN STENOTIC ARTERIOVENOUS FISTULA DISEASE

Carroll M[1], Shaikh U[1], Cullen N[1], Littler P[2] and Powell S[1].
[1]Royal Liverpool and Broadgreen University Hospital NHS Trust, [2]University Hospital Aintree NHS Trust.

Purpose: To assess the technical and clinical success of PTFE stent grafts versus uncovered stents in angioplasty resistant stenoses. The primary outcome measure was the patency of the fistula in the treatment area at interval follow-up. Secondary outcome measures were primary and secondary patency of the access circuit at interval follow-up.

Material and methods: Between July 2008 and March 2010, 19 patients were recruited to this prospective, single centre, randomised control trial. A total of 9 patients were randomised to PTFE covered stent placement and 10 to uncovered stent placement. Patients were followed-up with Duplex ultrasound at 1, 3, 6 and 12 months following intervention.

Results: Primary patency of the treatment area for uncovered stents were superior at 12 months compared with covered stent grafts (60% vs 44%). There was no statistical difference in secondary patency between the groups.

Conclusions: Published data has suggested stent grafts have an advantage in treating stenoses in AV fistulae. This has not been bourn out in our series and we discuss the factors involved.

SURVEY OF HAEMODIALYSIS PATIENTS TO DETERMINE REASONS FOR REFUSAL OF ARTERIOVENOUS FISTULAS

S Onida, J Aylward ,C Stewart, R Harvey, I Ahmed, M Caruana, M Salman, SW Yusuf, K El-Sakka
Vascular Surgery Department, Brighton and Sussex University Hospitals NHS Trust.

Purpose: Clinical practice guidelines produced by the renal association recommend that 85% of all prevalent patients on haemodialysis should dialyse through an arteriovenous fistula. There are many reasons for patients to dialyse through a central venous catheter (CVC), but patient refusal was thought to be a major determining factor. Understanding reasons behind refusal may help plan access surgery, and reduce refusal rates.

Materials and Methods: We audited our current prevalent dialysis population to determine the numbers of those currently receiving haemodialysis. If they were dialysing through a CVC, we determined the reasons behind this. If it was patient refusal, we attempted to contact them to analyse their reasons for CVC preference.

Results: From a prevalent dialysis population of 339, 253 patients (75%) were dialysing via a fistula. Of 86 patients dialysing via a CVC, 25 (7.4%) were listed as refusing a fistula. 15 patients were able to be contacted, 3 refused to take part, and the reasons behind their reluctance for a fistula noted. There were multiple reasons behind patients' preference for a CVC. The most common (5/12) reason was because of potential complications from the fistula.

Conclusion: The number of patients refusing a fistula is 7.4% in our unit, and therefore a target of 85% prevalence should be achievable. The reasons for CVC preference were varied, but the main factor was previous poor experience with multiple attempted fistulae. This study emphasises that the patient's ideal would be a single fistula that remains patent for as long as possible.

DOES REGIONAL COMPARED TO LOCAL ANAESTHESIA INFLUENCE OUTCOME AFTER ARTERIOVENOUS FISTULA CREATION?

R. Zaliunaite[1], R. Kearns[1], M. Clancy[2], A. Macfarlane[1]
[1]Dept of Anaesthesia, Glasgow Royal Infirmary and [2]Transplant Unit, Western Infirmary, Glasgow

Purpose: Approximately 25% of arteriovenous fistulae (AVF) fail at an early stage. There remains no conclusive evidence that any particular anaesthetic technique can significantly influence surgical outcome.1 General anaesthesia is associated with a higher number of anaesthetic complications in this patient group but there is little data comparing the two alternatives of local (LA) or regional anaesthesia (RA) 2. Because RA and not LA increases intra- and post-operative blood flow, which may be beneficial, we performed a retrospective analysis comparing LA.

Methods: shioned under eith ent demograp nd LA groups we

Results: 76 AVF were performed, of which 65 were primary. Compared to LA, RA was associated with significantly greater AVF success rates overall (p=0.003), but also with primary AVF alone (93% vs 52%, p=0.01) and primary radiocephalic AVF (p=0.027). Brachiocephalic AVF success rates (n=11) were unrelated to anaesthetic (p=0.258). Diabetes mellitus did not influence outcome (n=11).

Conclusion: Based on our retrospective data, with its limitations, RA improves the success rates of AVF compared to LA. Our data was likely underpowered regarding brachiocephalic AVF. Further prospective studies are required to confirm these findings.

References

1. Rodriguez JA et al. The function of permanent vascular access. Nephrol Dial Transplant 2000; 15: 402-8.
2. Malinzak EB, Gan TJ. Regional Anaesthesia for Vascular Access Surgery. Anesthesia and Analgesia 2009; 109: 976-980.

ABSTRACTS - SESSION 2

HOW TO INCREASE THE USE OF THE BUTTONHOLE TECHNIQUE FOR NEEDLING ARTERIOVENOUS FISTULAS?

N. Cole, A. Cole, S. Lawman
Sussex Kidney Unit, Brighton and Sussex University Hospitals NHS Trust, Brighton.

UK Renal Association haemodialysis guidelines identify the Buttonhole (BH) technique as the preferred method of AVF cannulation. We audited the Sussex Kidney Unit (SKU) BH experience to identify how to increase the number of patients using BH. BH was introduced in the SKU central main HD unit and the home programme in February 2010. 131/182 patients had a mature AVF in this group. Buttonholing has been attempted in 49 of these 131 patients (37%), Table.

Median follow-up in successful BH group 203 days. 4 patients BH cannulation continued until haemodialysis ceased (RIP 2, transplant 2). Time to establish BH tract was variable (14 to114 days) and operator dependant.

	n	%	
BH established	40/49	82%	currently establishing BH n=1, failed to move to blunt needles n=8 (failed to establish tract n=4, transplanted n=2, pseudoaneurysm n=1, contact dermatitis n=1)
Prolonged BH use	28/40	70%	
BH failure after successful introduction	12/40	30%	Infected Buttonhole n=1, AVF thrombosis n=1, inadequate URR n=1, patient withdrawal n=1, technical difficulties n=8

The mean age of patients successfully BH (65 years) was statistically different to pts failed due to needling difficulties (74yrs) p=0.03. Successful BH did not correlate with maturity of the fistula or type of AVF. We are auditing diabetic status, naïve AVF versus previous needling, age of AVF, change in URR on BH commencement, intervention rates.

THANK YOU

VASBI WOULD LIKE TO THANK ALL THEIR INDUSTRY PARTNERS
FOR THE SUPPORT OF THE VASBI ANNUAL MEETING 2011 WITH SPECIAL THANKS TO
COVIDIEN, ATRIUM AND **BOEHRINGER INGELHEIM**.

Premium performance for improved patient outcomes.

- **Reduced catheter intervention**
- **Non-eluting heparin technology**
- **Silver antimicrobial sleeve**
- **Compact tip design**
- **Reduced recirculation**

Visit us to learn how Covidien can help you with dialysis catheter complications.

Palindrome™ HSI Heparin Coated and Antimicrobial Dialysis Catheter

COVIDIEN
positive results for life™

www.covidien.com

CONFERENCE OFFICE

VASBI Ltd, PO Box 2769, Bearsden, Glasgow, G61 4WR, UK
Tel: +44 (0) 141 942 8104 **Fax:** +44 (0) 141 942 8278 **Email:** ruth.moss@ntlworld.com

www.vasbi.org.uk