Chapter 5: The UK Vascular Access Survey – Follow-up Data and Repeat Survey

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Summary

- In the 2006 vascular access survey, 51% of all patients commenced renal replacement therapy using definitive access. Of patients commencing on HD, 37% commenced with definitive access (31% in the 2005 survey).
- Of those known to the renal units for a year or more, only half started HD with definitive access.
- 4% of patients currently receiving haemodialysis were in-patients.
- 30% of staphylococcal line infections were MRSA, which was similar to the 2005 survey.
- At 6 months after starting RRT, 76% of live patients were using definitive access (defined as the use of peritoneal dialysis, transplant, AVF or AVG) and at 12 months it was 80%.
- Of HD patients starting RRT in April 2005, 65% started using venous catheters, at 6 months this had fallen to 35% and at 12 months 30%. The use of non-tunnelled lines was below 1% by 6 months.
- The proportion on PD had fallen slightly at 12 months (from 20% to 16%) by which time 11% had received a transplant, 1% had recovered and 18% had died.
- Data returns for the 2006 survey were returned from 37/74 renal units compared with returns from 62 units in the 2005 survey.

Introduction

Vascular access remains a key component for the treatment of patients receiving haemodialysis with established renal failure. In the last Registry report, preliminary data from the National Survey were published[1]. This confirmed that for prevalent patients on established renal replacement therapy, vascular access provision across the country was variable. Only a minority of units reached recognised standards for the delivery of care. Vascular access is an important determinant of both morbidity and mortality in patients. Recent DOPPS data[2] suggest that much of the international difference in outcomes for patients on haemodialysis may be associated with vascular access provision. In the 2005 Registry report, it was confirmed that there was a high burden of morbidity in haemodialysis patients, as judged by in-patient bed requirements and *Staphylococcus aureus* infection and there was evidence of an association between the use of venous catheters and these morbidities.

Following the vascular access survey and the Registry report a number of initiatives have been launched. These include a working party from the Renal Association, the Vascular Society and the British Society of Interventional Radiologists which provided a report on the configuration and provision of services to provide and maintain vascular access in patients requiring haemodialysis[3]. Within England, the Department of Health has piloted and launched a supplementary renal dataset as a support to the Health Protection Agency MRSA reporting system (MESS).

This chapter reports on data related to the repeated 2006 survey and then analyses the follow-up data from the 2005 incident cohort and report information from the organisational section of the original survey.

Methods

Vascular Access Survey 2006

A further abbreviated survey set was requested for April 2006. This again required a manual

collection in paper form and requested data on *Staphylococcus aureus* bacteraemias during 2005 and information on the incident patients during April 2006.

Vascular Access Survey 2005 Follow up data and organisational data

As part of the 2005 Vascular Access Survey, units were requested to return follow up data on the incident cohort that was originally reported on. Units had returned data on patients commencing renal replacement therapy for established renal failure (ERF) in April 2005. As has been previously detailed[1] the purpose of this was to track the efficiency of the system and to understand the patient pathway. The initial report showed that only 45% of people commenced dialysis via definite access. Even for those patients known to a renal unit for over a year prior to the initiation of dialysis, 40% start dialysis using venous catheters. It was the intention to track the progress of patients through the pathway of access, to determine the responsiveness of the system of care. Data were requested on modality, access, transplant status and mortality at 6 months and 12 months after initiation of RRT. Data on several aspects of resources available for vascular access support were also collected.

Results

Vascular Access Survey 2006

Data returns

All renal units in the United Kingdom were circulated with a reduced survey in 2006. Of the 74 centres, 37 returned data (Table 5.1). Centre dialysis populations ranged from 88 to 720, median 203. The total number of prevalent dialysis patients was 9,495, 1,972 on peritoneal dialysis and 7,523 on haemodialysis on the day of census. Several large metropolitan areas were poorly represented – the two largest units, QE Birmingham and Barts & The Royal London were unable to return data. The results from this smaller sample were essentially the same as in the 2005 survey.

Morbidity data

Infection

Centres again provided information on the number of *Staphylococcus aureus* bacteraemic episodes diagnosed in the prevalent haemodialysis population during the calendar year 2005, and the number of those due to Methicillin resistant species. There were 590 episodes from 35 reporting centres: 179 (30%) were MRSA (29% in 2004). Rates by centre are summarised in Table 5.1. The median rate was 8.1 *Staph. Aureus* bacteraemias per 100 haemodialysis patients, with rates ranging from 1.9 to 18.2 episodes/100 patients. As all these *Staph. Aureus* infections will only be occurring in HD patients with lines, the true rate is 25 *Staph. Aureus* bacteraemias per 100 HD patients with a line.

Bed occupancy

On census day, the numbers of in-patient beds occupied by haemodialysis patients were collated. A total of 295 (3.9%) from 7,523 haemodialysis patients were in-patients and this compared with 5% in the 2005 survey.

Incident data

The 37 centres reported 236 incident patients during April 2006, range 0 to 17 (Table 5.1). About one third were female and 92% Caucasian. Unchanged from the 2005 survey, over half had been referred for access prior to renal replacement therapy and 11% (10% in 2005) were transplant listed prior to the initiation of RRT.

The survey demonstrated a similar pattern of modality and access at first renal replacement therapy to that shown in the 2005 survey: 1.3% received a pre-emptive transplant, 20% commenced on peritoneal dialysis and 78% started on haemodialysis. Of the 185 patients commencing on haemodialysis, only 37% did so with an arteriovenous fistula or graft (31% in the 2005 survey).

Modality data

As in 2005, nearly a third of incident patients present within 6 months of requiring renal

Table 5.1: Results of repeat vascular access survey 2006

	Prevalent patients									
Hospital name	**HD**	**PD**	**Total dialysis**	**Staph. Aureus**	**MRSA**	**In pts on renal beds**	**MRSA/SA**	**SA/100 pts**	**% HD in-patients**	**Incident patients**
Aberdeen Royal Infirmary	191	42	233	7	2	6	28.6	3.7	3.1	1
Addenbrookes Hospital	278	71	349	6	1	8	16.7	2.2	2.9	5
Antrim Hospital	122	36	158	3	2	8	66.7	2.5	6.6	1
Arrowe Park Hospital	172	31	203	16	5	10	31.3	9.3	5.8	4
Basildon Hospital	137	28	165	7	1	2	14.3	5.1	1.5	9
Broomfield Hospital	107	37	144	2	1	7	50.0	1.9	6.5	6
Crosshouse Hospital	109	44	153	14	5	3	35.7	12.8	2.8	3
Cumberland Infirmary	74	22	96	6	0	4	0.0	8.1	5.4	0
Daisy Hill Hospital	88	16	104	4	0	1	0.0	4.5	1.1	1
Derby City General Hospital	203	71	274	6	1	1	16.7	3.0	0.5	8
Freeman Hospital & Royal Victoria Infirmary	236	50	286	43	10	17	23.3	18.2	7.2	6
Gloucester Royal Hospital	141	35	176	11	1	7	9.1	7.8	5.0	3
Guy's and St Thomas's Hospital	439	77	516	28	11	13	39.3	6.4	3.0	11
Heartlands Hospital	339	44	383	12	4	10	33.3	3.5	2.9	10
Hull Royal Infirmary	288	67	355	38	19	9	50.0	13.2	3.1	8
Ipswich Hospital	103	64	167	4	1	4	25.0	3.9	3.9	6
James Cook University Hospital	242	30	272	21	11	14	52.4	8.7	5.8	8
King's College Hospital	312	79	391	36	9	23	25.0	11.5	7.4	5
Monklands Hospital	155	30	185	14	4	8	28.6	9.0	5.2	6
Morriston Hospital	282	72	354	43	9	8	20.9	15.2	2.8	13
New Cross Hospital	288	53	341	41	7		17.1	14.2		4
Ninewells Hospital	138	57	195	21	7	8	33.3	15.2	5.8	4
Northern General Hospital	563	157	720	56	15	19	26.8	9.9	3.4	16
Oxford Radcliffe Hospital	341	121	462	22	7	11	31.8	6.5	3.2	12
Queen Margaret's Hospital	100	28	128	11	3	10	27.3	11.0	10.0	1
Royal Berkshire Hospital	186	94	280	5	2	8	40.0	2.7	4.3	17
Royal Cornwall Hospital (Treliske)	146	37	183							5
Royal Devon and Exeter Hospital (Wonford)	252	100	352	18	6	5	33.3	7.1	2.0	7
Royal Infirmary of Edinburgh (New Royal)	238	61	299			10			4.2	4
Royal Preston Hospital	340	103	443	16	7	9	43.8	4.7	2.6	17
Royal Sussex County Hospital	306	90	396	27	8	16	29.6	8.8	5.2	10
Southend Hospital	125	21	146	18	1	3	5.6	14.4	2.4	9
Tyrone County Hospital	111	8	119	10	1	10	10.0	9.0	9.0	3
University Hospital Aintree	88	0	88	9	8	6	88.9	10.2	6.8	5
Wrexham Maelor Hospital	87	37	124	4	4	7	100.0	4.6	8.0	3
York District General Hospital	126	29	155	4	1	6	25.0	3.2	4.8	4
Ysbyty Gwynedd	70	30	100	7	5	4	71.4	10.0	5.7	1
Total	**7,523**	**1,972**	**9,495**	**590**	**179**	**295**	**30.3**	**7.8**	**3.9**	**236**

HD – number of prevalent haemodialysis patients
PD – number of prevalent peritoneal dialysis patients
Total dialysis – prevalent dialysis population
Staph. Aureus – number of *Staph. Aureus* associated bacteraemias during 2005 for haemodialysis patients
MRSA – Methicillin resistant *Staph. Aureus* associated bacteraemias during 2005 for haemodialysis patients
In pts on renal beds – number HD patients currently deemed to occupy a hospital bed on census day
MRSA/SA – MRSA % of overall *Staph. Aureus* number
SA/100 pts – *Staph. Aureus* bacteraemias per annum per 100 HD patients
% HD in-patients – % of overall HD population currently designated as in-patient
37 out of 74 units returned the data.

Table 5.2: Time from referral to renal services and 1st RRT by dialysis modality

Months	HD %	PD %	HD n	PD n	Total n
0–3	84.8	15.2	39	7	46
3–6	61.5	38.5	8	5	13
6–12	80.0	20.0	16	4	20
12 m+	75.0	25.0	93	31	124
Total	**76.8**	**23.2**	**156**	**47**	**203**

Table 5.3: Time since first contact and access type in HD patients

Months	AVF n	AVG n	Tunnelled line n	Non tunnelled n	Catheter %	Total n
0–3	1	0	16	22	97.4	39
3–6	3	0	2	3	62.5	8
6–12	5	0	7	4	68.8	16
12 m+	51	3	20	19	41.9	93
Total	**60**	**3**	**45**	**48**	**59.6**	**156**

support (Table 5.2). There was some difference in the modality selection when compared over presentation intervals. For 'late presenters', 15% used PD and for 'timely starters' 25% used PD (Table 5.2).

Overall 60% of haemodialysis starters used a venous catheter (Table 5.3). As in 2004, 'late presenters' were highly likely to start with a catheter, but a disappointingly high proportion of long-known patients were also subjected to venous lines.

Vascular Access Survey 2005 – follow-up data

Data returns

In the original survey, 62 units reported on a total of 457 incident patients. Three of those units did not have any new starters in April 2005. Complete 6 and 12 month follow up data were returned on 395 patients from 54 units. Five centres were unable to return follow-up data (Barts and the Royal London, Basildon, Kent and Canterbury, Norfolk, and the University Hospital of North Staffordshire). The follow up analysis reports on the 395 incident patients for whom complete data are available.

Table 5.4 lists the centres with the number of incident patients. Reported numbers ranged from 1 to 25, the largest centre being the Queen Elizabeth Hospital, Birmingham.

The full details of the incident patients are in the 2005 Registry Report. There was a male to female gender ratio of approximately 1.5:1 and 85% were Caucasian. Asian and Black ethnic origin accounted for 13%. These are in keeping with the dialysis population across England and Wales.

Access modality at start, 6 & 12 months post commencement of renal replacement therapy

Table 5.5 shows both frequency and percentage of patients as broken down by modality and access type. Twenty-six percent of patients commenced dialysis using either an arteriovenous fistula (AVF) or an arteriovenous graft (AVG). Forty-nine percent commenced using venous catheters, split approximately equally between tunnelled and non-tunnelled. Twenty percent of patients commenced on peritoneal dialysis and 4% were pre-emptively transplanted.

At 6 months, 76% of live patients were using definitive access (defined as the use of peritoneal dialysis, transplant, AVF or AVG) and at 12 months 80%. Of haemodialysis patients, 65% started using venous catheters, at 6 months this had fallen to 35% and at 12 months 30%. The use of non-tunnelled lines was below 1% by 6 months. The proportion on PD had fallen slightly at 12 months (from 20% to 16%) by which time 11% had received a transplant, 1% had recovered and 18% had died.

Table 5.4: Centres returning follow-up data, with number of incident patients in April 2005

Centre	Incident number	Centre	Incident number
Aberdeen Royal Infirmary	5	Northern General Hospital	18
Addenbrookes Hospital	7	Nottingham City Hospital	7
Arrowe Park Hospital	5	Oxford Radcliffe Hospital	12
Belfast City Hospital	9	Queen Elizabeth Hospital	25
Birmingham Children's Hospital	3	Queen Margaret's Hospital	5
Broomfield Hospital	3	Raigmore Hospital	1
Crosshouse Hospital	2	Royal Berkshire Hospital	12
Derby City General Hospital	10	Royal Cornwall Hospital (Treliske)	2
Derriford Hospital	3	Royal Infirmary of Edinburgh	10
Dumfries & Galloway Royal Inf	2	Royal Liverpool University Hosp	7
Freeman Hospital & Royal Vict	6	Royal Preston Hospital	12
Glasgow Royal Infirmary	7	Royal Sussex County Hospital	6
Gloucester Royal Hospital	4	Russells Hall Hospital	4
Guy's and St Thomas's Hospital	16	Southend Hospital	2
Heartlands Hospital	5	Southmead Hospital	12
Hope Hospital	11	St George's Hospital	9
Hull Royal Infirmary	16	St Helier Hospital	14
Ipswich Hospital	4	St James's University Hospital	12
James Cook University Hospital	9	St Luke's Hospital	2
King's College Hospital	6	Tyrone County Hospital	4
Leeds General Infirmary	14	University Hospital Aintree	5
Leicester General Hospital	13	Walsgrave Hospital	4
Lister Hospital	10	Western Infirmary Glasgow	8
Monklands Hospital	4	Wrexham Maelor Hospital	5
Morriston Hospital	7	York District General Hospital	2
New Cross Hospital	8	Ysbyty Glan Clwyd	3
Ninewells Hospital	2	Ysbyty Gwynedd	1

Table 5.5: Modality and access at start of RRT, and at 6 and 12 months

	At start		At 6 months		At 12 months	
Access and modality	**Frequency**	**Per cent**	**Frequency**	**Per cent**	**Frequency**	**Per cent**
Haemodialysis	**298**	**76**	**232**	**60**	**193**	**52**
AVF	98	25	145	38	132	36
AVG	6	2	6	2	4	1
Non-tunnelled line	103	26	3	1	3	1
Tunnelled line	91	23	78	20	54	15
PD	**79**	**20**	**78**	**20**	**58**	**16**
Transplanted	**16**	**4**	**24**	**6**	**40**	**11**
Recovered			8	2	5	1
Died			40	10	66	18
Transferred out					4	1
Unknown			3	1	2	1
Missing	2		10		27	
Total number	**395**		**395**		**395**	

Table 5.6 presents the data for haemodialysis patients alone broken down by access at start, at 6 months and 12 months post commencement of renal replacement therapy. As already reported only 35% of patients commenced haemodialysis using definitive access as defined by the use of an arterial venous fistula or arterial venous graft. Non-tunnelled access

Table 5.6: Haemodialysis patients' access at start, 6 and 12 months

	At start		At 6 months		At 12 months	
Access	**Frequency**	**Per cent**	**Frequency**	**Per cent**	**Frequency**	**Per cent**
AVF	98	33	145	62	132	69
AVG	6	2	6	3	4	2
Non tunnelled	103	35	3	1	3	2
Tunnelled	91	31	78	34	54	28
Total	**298**		**232**		**193**	

made up over a third of these patients at 35% and tunnelled access was used in 31%. At 6 months, 65% of haemodialysis patients were utilising arterial venous fistulas or grafts, the vast majority being fistulas. Non-tunnelled usage had fallen substantially but one third were still using tunnelled access. There was a small rise in the percentage using definitive access between 6 and 12 months reaching just over 70% and the percentage using tunnelled access had fallen to 28%. This is comparable with the overall prevalent level reported in last year's report for haemodialysis at 69% and would suggest that the steady state for the current system is reached in a year or less. Overall, definitive access in the incident group at one year (defined as the use of an AV fistula, AV graft or peritoneal dialysis) was achieved in 194 patients of a total of 251 (77%) patients still on dialytic therapies. This analysis of individual patient data is identical to the summarised prevalent cross sectional data reported for definitive access, with a rate of 77% across the United Kingdom. These data suggest that the sample incident cohort is therefore a useful representation of the overall picture across the United Kingdom.

Transplantation and transplant waiting list

At start, 5% of the patients had been transplanted and 7% were listed and active on transplant waiting lists. At 12 months, 15 patients were in work up, 40 had been transplanted and 48 were active on the waiting list, representing 39% of active patients. Of the overall incident cohort, 5% had been pre-emptively transplanted, another 1.5% were transplanted between 0–6 months and a further 4% transplanted between 6–12 months. These data are similar to the detailed joint analysis with UK Transplant presented in the 2005 report, suggesting that this small cohort is representative of the whole RRT population.

Patient pathway

These data demonstrate that the use of definitive access increases over time in the incident patient cohort. What is of interest is the relationship between starting access and access at a later time. This does provide a surrogate for systematic efficiency and the activity an individual is exposed to. The surveys sent out at 6 and 12 months allow the generation of a matrix of access and modality, comparing start with 6 or 12 months.

Table 5.7 summarises the data for patients at 6 months and Table 5.8 for 12 months. The left hand column (or y axis) indicates the type of dialysis at the start and the x axis or headers give the access at 6 months.

Around 10% of patients starting using venous catheters have converted to PD by 6 months with little change thereafter. There is a steady overall failure rate of AV fistulae with 8% of the original fistula cohort using venous catheters by one year.

There was a rapid move away from non-tunnelled access to tunnelled access. By 6 months, for non-tunnelled access, which made up 103 of the incident group, 34% were utilising tunnelled access, a quarter were now utilising AV fistulas. Nearly one in five (18%) were deceased and one was transplanted. There was a similar pattern for tunnelled access. Thirty four percent had been converted to an AV fistula, 10% were deceased and 34% were still utilising tunnelled access. Seven had been converted on to PD and 4 had recovered.

At 12 months there was a 12% mortality rate in the AVF group. For those initiated via

Table 5.7: Access and modality matrix at 6 months

		Access/modality at 6 months										
At start		**Miss**	**Died**	**AVF**	**AVG**	**Non tunnelled**	**Tunnel**	**PD**	**Recover**	**Unknown**	**Transplant**	**Total**
AVF	Frequency	1	4	81	2	0	4	2	0	0	4	**98**
	%	1	4	83	2	0	4	2	0	0	4	
AVG	Frequency	0	1	2	2	0	0	0	0	0	1	**6**
	%	0	17	33	33	0	0	0	0	0	17	
Non tunnelled	Frequency	3	18	26	0	3	35	13	4	0	1	**103**
	%	3	18	25	0	3	34	13	4	0	1	
Tunnelled	Frequency	1	10	31	2	0	34	7	4	1	1	**91**
	%	1	11	34	2	0	37	8	4	1	1	
PD	Frequency	5	7	3	0	0	5	56	0	0	3	**79**
	%	6	9	4	0	0	6	71	0	0	4	
Transplant	Frequency	0	0	0	0	0	0	0	0	2	14	**16**
	%	0	0	0	0	0	0	0	0	13	88	
Total	**Frequency**	**10**	**40**	**145**	**6**	**3**	**78**	**78**	**8**	**3**	**24**	**395**

Table 5.8: Access and modality matrix at 12 months

		Access/modality at 12 months											
At start		**Miss**	**Died**	**AVF**	**AVG**	**Non tunnelled**	**Tunnel**	**PD**	**Recover**	**Trans-ferred**	**Unknown**	**Transplant**	**Total**
AVF	Frequency	5	12	61	0	1	8	0	0	0	0	11	**98**
	%	5	12	62	0	1	8	0	0	0	0	11	
AVG	Frequency	1	1	1	1	1	0	0	0	0	0	1	**6**
	%	17	17	17	17	17	0	0	0	0	0	17	
Non tunnelled	Frequency	4	27	34	1	0	20	11	2	0	0	4	**103**
	%	4	26	33	1	0	19	11	2	0	0	4	
Tunnelled	Frequency	10	14	29	2	1	19	8	2	2	2	2	**91**
	%	11	15	32	2	1	21	9	2	2	2	2	
PD	Frequency	7	11	5	0	0	7	39	1	2	0	7	**79**
	%	9	14	6	0	0	9	49	1	3	0	9	
Transplant	Frequency	0	0	1	0	0	0	0	0	0	0	15	**16**
	%	0	0	6	0	0	0	0	0	0	0	94	
Total	**Frequency**	**27**	**66**	**132**	**4**	**3**	**54**	**58**	**5**	**4**	**2**	**40**	**395**

non-tunnelled access, one third were utilising an AV fistula but 20% were still using tunnelled access. For those who started using tunnelled catheters, 32% were utilizing an AV fistula, 15% were deceased and 21% still remained on tunnelled access.

For peritoneal dialysis, 79 patients started on this modality. Of those, 71% were still on PD at 6 months and 50% at 12 months – seven had been transplanted and 12 were on haemodialysis, 5 of whom had an AV fistula and 7 a catheter. The mortality rate at 1 year in this group was 14%.

These data are not individual patient's timelines but are only snapshot data at given moments; they do not give an idea of the frequency at which individual patients change between one form of modality or access to another over the 12 month period. Neither do they give an idea of how many failed access attempts there may have been in patients who continue to use venous catheters at 6 and 12 months. Nevertheless these are potentially important data. The apparent slow transition to definitive access and rates of access failure are likely to expose patients to longer periods with venous catheters. These in turn are likely to be

associated with complications and therefore could have detrimental consequences for an individual.

Mortality and incident access and modality

Tables 5.7 and 5.8 show differing mortality rates for patients started on different modalities and types of access. However the patients in each group are highly selected and are not matched for age, late referral, primary disease or co-morbidities. Thus, although patients starting RRT using venous catheters appear to have a poor prognosis, after adjusting for patient age, this was not statistically significant at 12 months. These are relatively small numbers and this may account for lack of statistical significance.

Organisational data

The organisational data set included information on both work force and activity. Units provided information on numbers of surgical personnel and surgical procedures, plus the number of non tunnelled lines placed in April 2005. In the survey data tunnelled line placement and radiological procedures were not collected. For comparison with the following information, the 2005 survey reported on 457 incident patients. That number is relevant in terms of reporting the number of procedures that were carried out within the centres providing data. Table 5.9 outlines the numerical information.

During the month of April, 751 surgical procedures were delivered by 167 consultants. Of those, 122 were vascular accredited and 73 were transplant accredited: a proportion are dual accredited. In addition, during the same month 482 non tunnelled lines were inserted. There was no correlation between the number of incident patients and the number of surgical procedures that were carried out nor was there any correlation between the prevalent definitive access rate and the capacity of units, judged by surgical numbers or activity. In retrospect, April may have been a poor month to choose as it contained both a long Bank Holiday and a long school holiday during which many staff take leave and may not have been representative of normal activity or capacity.

Table 5.9: Organisational information summary

	Total (median, min–max)
Incident patients	457 (7, 1–25)
Surgical procedures	751 (11, 0–64)
Surgeons (consultant)	167 (2, 0–7)
Vascular consultants	122 (2, 0–7)
Transplant consultants	73 (1, 0–5)
Non tunnelled lines	482 (7, 0–37)

Total number with median, minimum and maximum for incident patients (all reported in April 2005), surgical procedures, consultant numbers and the use of non tunnelled lines.

During April 2005, as many temporary lines were inserted as there were incident patients (482 vs 457). What was not requested was on whom procedures were carried out. It is therefore unclear whether the majority of work is performed in those patients who are incident, predialysis, access or modality failures.

Discussion

The 2006 survey reinforced many of the messages of the original survey. A third of patients arrive late, most of whom require venous catheters at the start of dialysis. Many patients, known well in advance to nephrology clinics, still commence on venous catheters. Few patients are transplant listed prior to renal support. For every 100 haemodialysis patients there will be 8 episodes of *Staph. Aureus* bacteraemia per year: these episodes are indicative of the potential scale of infection amongst the dialysis population. Infection and access issues are a major contributor to in-patient bed days – 1 in 25 haemodialysis patients are an in-patient at any one time.

Follow up of the incident data has demonstrated that many patients over a year achieve either definitive access or transplantation but the rate appears to be slow. There is no evidence that there are fast track processes for patients for whom dialysis commences with a venous catheter. Also, the data are too small in number to judge whether late or early presentation has any bearing upon the subsequent formation of a robust dialysis plan.

At 6 months and at 12 months, many patients are still utilising venous catheters. In some, this appears to be related to AVF failure, but many come from the cohort who commenced renal replacement therapy with a catheter. The current data collection does not allow one to assess the number of different access procedures an individual is exposed to in any time period. This may of course be relevant to outcome – a high number of access procedures may exhaust conventional access rapidly and increase morbidity and mortality. This terminal failure of access may not be apparent in a one year time frame, but clearly is relevant.

The difficulties units experienced in making paper returns of data and the subsequent poor returns, highlight the need to develop electronic patient databases to capture and enable retrieval and analysis of such data from units. It will clearly not be possible to sustain such surveys without this.

Progress has been made towards this goal of improved IT. During 2006–7, 8 renal units in England piloted a web-based system for collection of an extended dataset by the Health Protection Agency (HPA) on patients on RRT with MRSA. This programme is now being extended to the whole of England. The Registry has collaborated with the HPA and the Cleaner Hospitals Team of the Department of Health for England in providing details of main and satellite units, to ensure that all patients on RRT developing MRSA bacteraemia can be accurately identified. This will supply more robust data on MRSA within renal centres and provide a lever to generate improvement in service. It is likely that this will also extend to *Clostridium difficile* in the future. The working party on vascular access brought together surgeons, radiologists and nephrologists to provide a template for a vascular access service with associated audit markers to drive improvement.

The Registry has contributed to the specification of the National Renal Dataset that all LSP systems will be required to support. This dataset includes a vascular access subset and has now been finalised and submitted to the Information Standards Board for approval. The DoH is expected to be providing some funding to pilot the additional data items in existing renal systems during 2007–8.

As had been noted in the previous report, for the individual patient the overall pathway towards established renal failure and the commencement of renal replacement therapy has several components. Late referral is certainly one aspect of that which affects a large number of patients. However, it is clear from the data that such patients do not rapidly move towards definitive access in a timely fashion. This suggests that an enhanced and rapid pathway for such late presenters is still not well established across the UK nephrological community. Given that about a third of patients are late presenters such systems should be developed as a matter of urgency.

Summary and recommendations

Key issues still remain.

Renal networks and commissioners must be involved in joining ownership of this important aspect of renal services. It is one of the key determinants of outcome of patients. The adoption of the audit standards from the working party and the Renal Association guidelines should form part of the feedback to commissioners.

It is hoped the continuing work on agreed definitions and data items for electronic collection will enable comparative performance to be assessed on a network by network basis and month upon month for individual centres.

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