



Dialysis Access in the United Kingdom

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Disclosure

Speaker name:

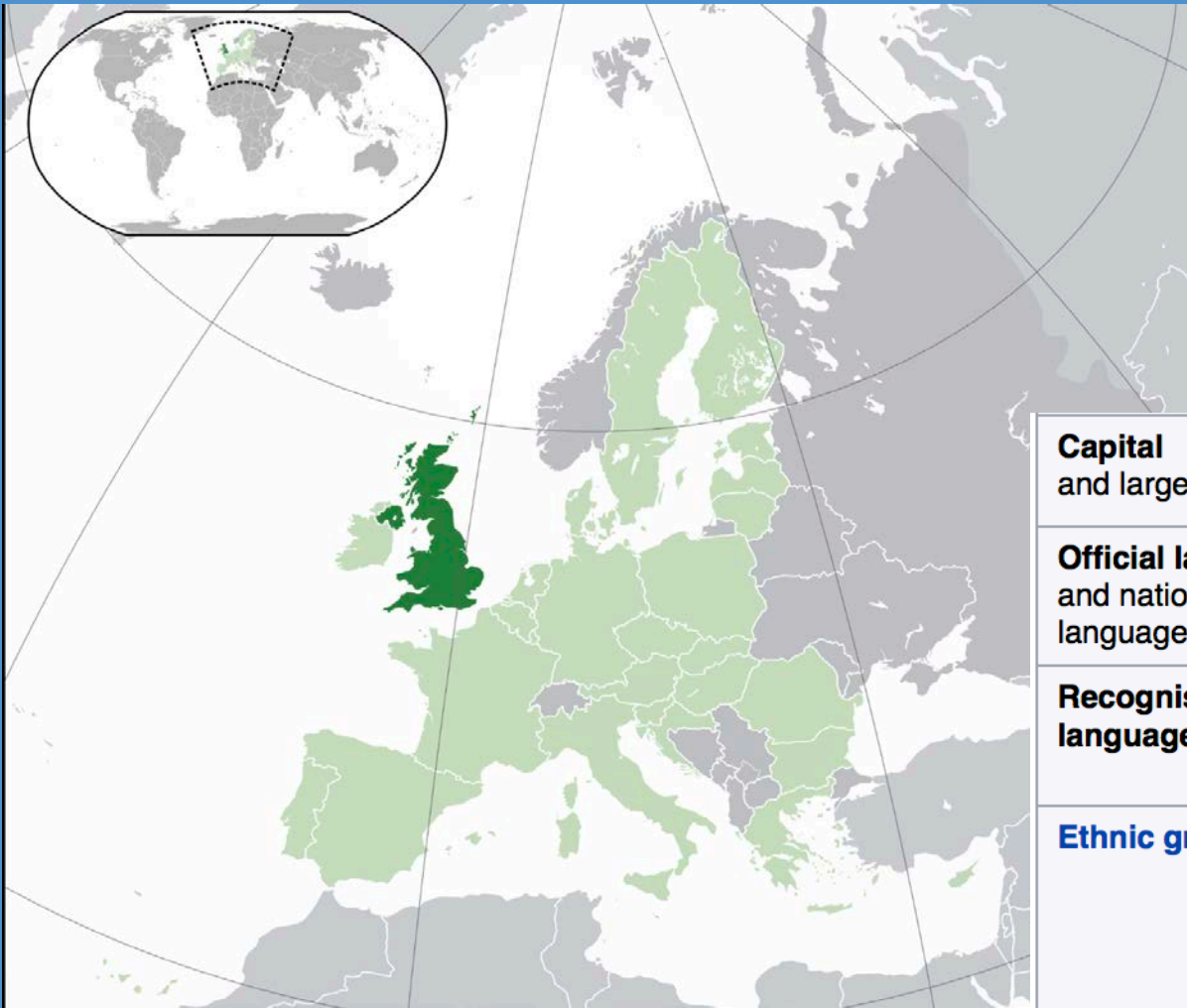
N Inston.....

X I do not have any potential conflict of interest

(....I didn't Vote Brexit!!!)



United Kingdom of Great Britain and Northern Ireland



Population 65 million

Capital and largest city	London  51°30'N 0°7'W
Official language and national language	English
Recognised regional languages ^[note 3]	Scots • Ulster Scots • Welsh • Cornish • Scottish Gaelic • Irish
Ethnic groups (2011)	87.1% White 7.0% Asian 3.0% Black 2.0% Mixed 0.9% others
Religion (2011)	59.5% Christian 25.7% Irreligious 4.4% Muslim 1.3% Hindu 0.4% Jewish 1.5% other religions 7.2% unknown ^[3]

Renal failure

- 64,000 people in the UK are being treated for end stage renal failure
- **Almost 30,000 people in the UK are on dialysis**

The estimated annual cost of chronic kidney disease to the NHS in England is

£1.45bn





UK Renal Registry

83 UK renal units

HD

Largest 1,445 (pop 2.40mill)

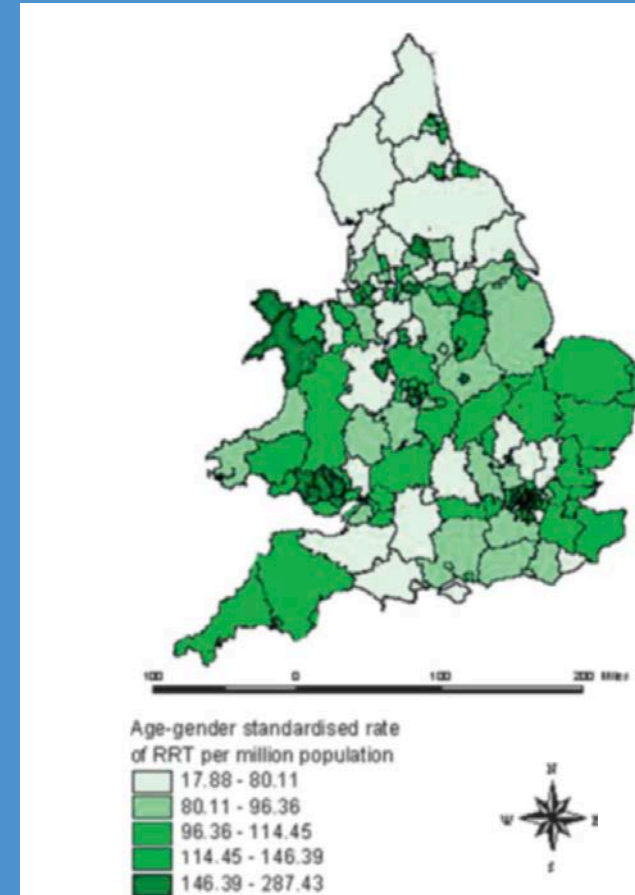
Smallest 54 (pop 0.15million)

Dialysis units
(satellites)



Incidence

- Incidence rate of ESKD
 - ◆ 115 per million population (pmp) in 2014
 - ◆ 120 pmp in 2015
- Renal replacement therapy (RRT) initiation for 7,814 new patients.



- Diabetic renal disease remained the single most common cause of renal failure (27.5%).
- The mean eGFR at the start of RRT was 8.5ml/min/ 1.73 m²
- Late presentation (<90 days) fell from 23.9% in 2006 to 16.4% in 2015.

Treatment	Median
HD	66.9
PD	60.3
Transplant	50.8

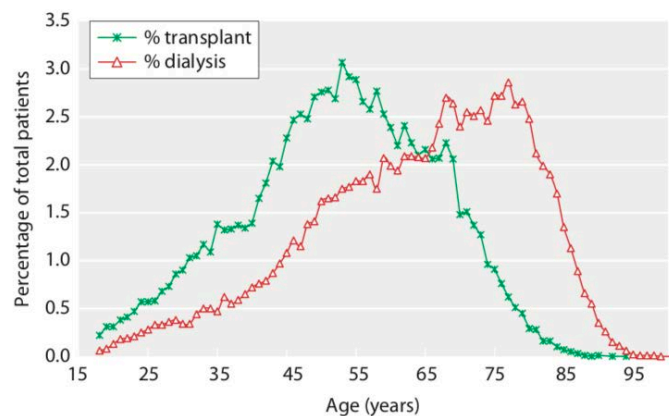


Fig. 2.4. Age profile of prevalent RRT patients by modality on 31/12/2015

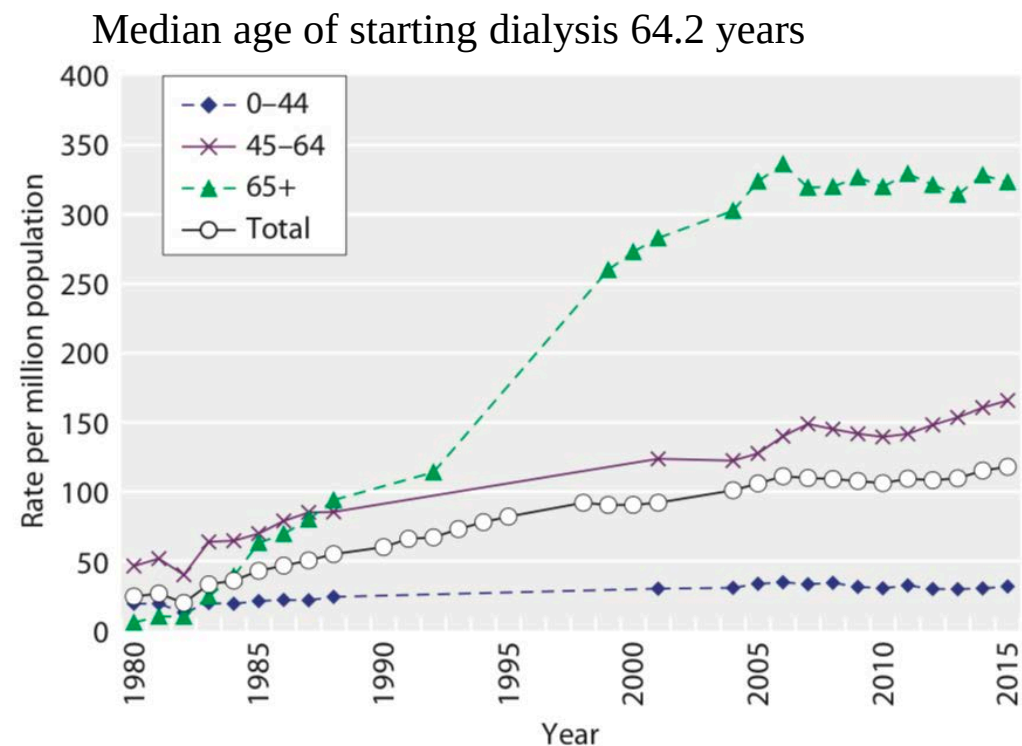


Fig. 1.3. RRT incidence rates between 1980 and 2015

Fox News 'terror expert' says everyone in Birmingham is a Muslim

Pundit on right-wing channel says non-Muslims "simply don't go" into Britain's second largest city, prompting immediate Twitter backlash



The largest ethnic group in Birmingham is White British (53.1%).



InvestigativeProject
@TheIPT



My comments on FoxNews about Birmingham were totally inaccurate. Birmingham, please accept my apology; I was wrong.

Steve Emerson

8:58 PM - Jan 11, 2015



50



405 people are talking about this



Ethnic groups (2011)	87.1% White
	7.0% Asian
	3.0% Black
	2.0% Mixed
	0.9% others
Religion (2011)	59.5% Christian
	25.7% Irreligious
	4.4% Muslim
	1.3% Hindu
	0.4% Jewish
	1.5% other religions
	7.2% unknown ^[3]



Table 1.7b. Percentage of incident RRT patients (2015) in different ethnic groups (England)

Country	% data not available	N with data	Percentage in each ethnic group				
			White	South Asian	Black	Chinese	Other
England	4.0	6,091	74.6	13.5	8.2	0.7	3.1

Prevalence

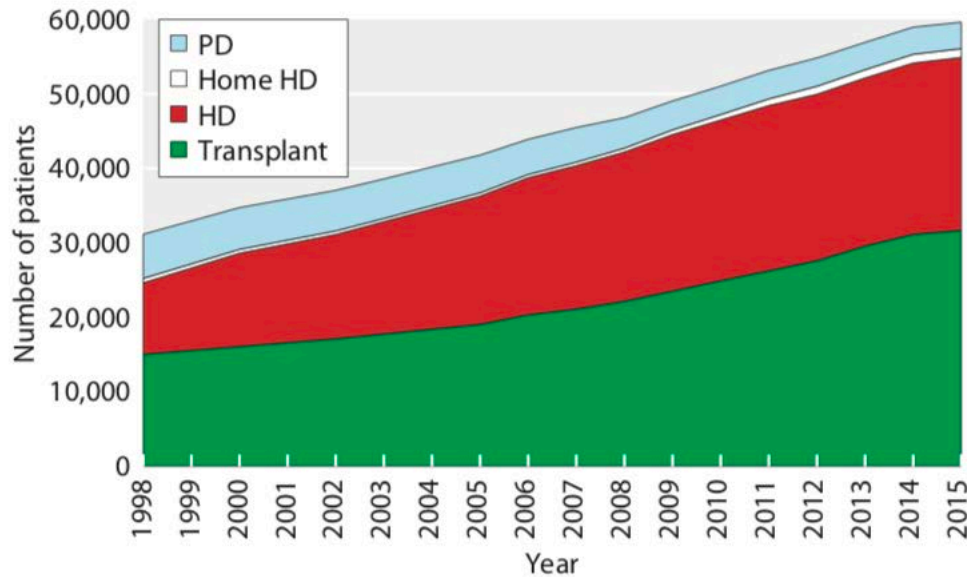


Fig. 2.2. Growth in prevalent patients by treatment modality at the end of each year 1998–2015

2015:

25 000 HD

3000 PD

27 000 Tx

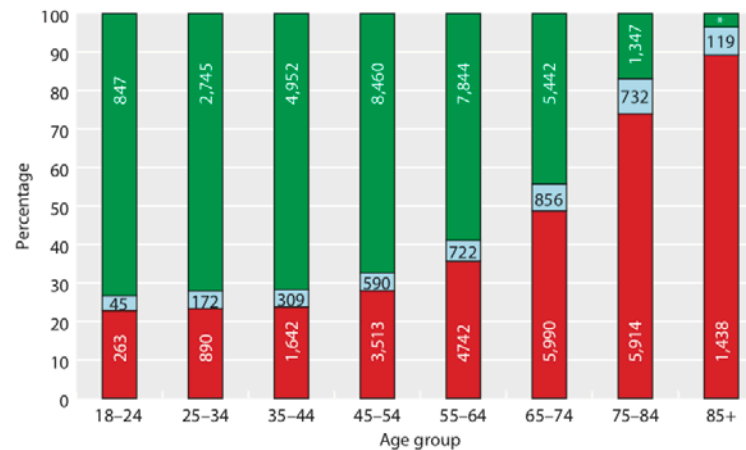


Fig. 2.7. Treatment modality distribution by age in prevalent RRT patients on 31/12/2015

*N = 55

Guidelines



- Nephrologist written
- no surgical or radiological input
- 60% of all incident patients with established ESKD commencing planned haemodialysis should receive dialysis via a functioning arteriovenous fistula (AVF) or arteriovenous graft (AVG).
- 80% of all prevalent long term dialysis patients should receive dialysis treatment via definitive access: AVF or AVG or Tenckhoff catheter.

Incentives

■ Altruism

■ National health system

- ◆ No individual incentives
- ◆ Government employees
- ◆ NHS salary based on seniority
- ◆ Salary not altered by activity

■ Unit based incentives – Best practice tariff (BPT)

Threshold	£ per annum
1 (starting salary)	76,761
2 (1 year completed as consultant)	79,165
3 (2 years completed)	81,568
4 (3 years completed)	83,972
5 (4-8 years completed)	86,369
6 (9-13 years completed)	92,078
7 (14-18 years completed)	97,787
8 (19 years completed)	103,490

Best practice tariff and payment by results

New Best Practice Tariffs introduced in 2011-12

Adult renal dialysis

This Best Practice Tariff aims to encourage the adoption of clinical best practice with respect to vascular access for haemodialysis where there is clear clinical consensus. As part of the Best Practice Tariff programme, we are introducing a mandatory currency with mandatory transition from local prices to national tariff for adult renal dialysis for patients with chronic renal failure.

Table 12: Haemodialysis tariff prices

HRG code	Description	Tariff per session £
LD01A	Hospital haemodialysis/filtration with access via haemodialysis catheter 19 years and over	128
LD02A	Hospital haemodialysis/filtration with access via arteriovenous fistula or graft 19 years and over	159
LD07A	Satellite haemodialysis/filtration with access via haemodialysis catheter with blood borne virus 19 years and over	146
LD08A	Satellite haemodialysis/filtration with access via arteriovenous fistula or graft with blood borne virus 19 years and over	182

Difference is
£31 per dialysis
session
£4836 pppa

UKRR 2015

Table 12.6. Dialysis access at three months since dialysis start for patients in the 2015 Multisite Dialysis Access audit, stratified by first access used

Access in use at first dialysis (N)	Access in use at three months (%)							
	AVF/AVG	TL	NTL	PD catheter	Transplanted	Died	Stopped/LTFU	No data
AVF/AVG (1,549)	88.4	5.1	0.1	0.1	1.5	2.9	1.9	0.0
TL (1,467)	9.3	78.9	0.3	2.2	1.4	6.8	1.0	0.1
NTL (1,016)	7.0	60.6	1.9	5.2	0.5	22.5	1.8	0.5
PD catheter (1,075)	0.5	6.6	0.2	83.0	2.8	2.4	0.7	3.9

Shaded cells highlight the percentage of patients who remained on the same modality at three months

PD – peritoneal dialysis; AVF – arteriovenous fistula; AVG – arteriovenous graft; TL – tunnelled line; NTL – non-tunnelled line; LTFU – lost to follow-up

Started dialysis on a line = 2483 Started on AVF/AVG = 1549
(= **62% start on a CVC**)

At 3/12 60.6% - 78.9% on a CVC if started on one

At 3/12 88.4% of pts on a AVF/AVG who started on one

(= 180+ 856 = **25.9% all HD patients remain on a CVC at 3mo**)

Table 12.10. Annual rates of definitive access and pre-emptive transplantation and concordance with Renal Association audit standards

Modality in incident and prevalent patients	2011	2012	2013	2014	2015	Audit standard
Incident patients						
Definitive access (AVF/AVG/PD) or PTx in incident RRT patients (%)	56.5	57.6	58.7	56.5	55.3	None set
Definitive access (AVF/AVG/PD) or PTx in incident RRT patients excluding late presenters (%)	62.9	63.4	64.8	62.6	61.4	None set
AVF/AVG in incident HD patients (%)	41.4	40.9	41.8	39.2	38.6	None set
AVF/AVG in incident HD patients, excluding late presentation (%)	48.3	47.4	48.4	45.6	45.2	60%
AVF/AVG/PD in incident dialysis patients (%)	53.0	54.0	54.6	52.2	51.7	None set
AVF/AVG/PD in incident dialysis patients excluding late presentation (%)	59.5	59.9	60.8	58.3	57.8	None set
Prevalent patients						
Definitive access (AVF/AVG/PD) in prevalent dialysis patients (%)	*	82.3	79.0	73.6	72.6	80%
AVF/AVG in prevalent HD patients (%)	*	79.0	75.4	69.6	68.6	None set

In 2015, audit standards were updated for AVF/AVG in incident HD patients (minimum standard reduced from 65% to 60%); incident RRT recipients (to include PD and PTx; no minimum standard set) and prevalent dialysis patients (to include PD and HD via AVF/AVG – ‘definitive access’, minimum standard 80%). It is not entirely the same centres submitting access data each year and therefore direct year-to-year comparisons in performance are not valid.

HD – haemodialysis; PD – peritoneal dialysis; AVF – arteriovenous fistula; AVG – arteriovenous graft; TL – tunnelled line; NTL – non-tunnelled line; RRT – renal replacement therapy

*Prevalent data were not collected in the 2011 audit

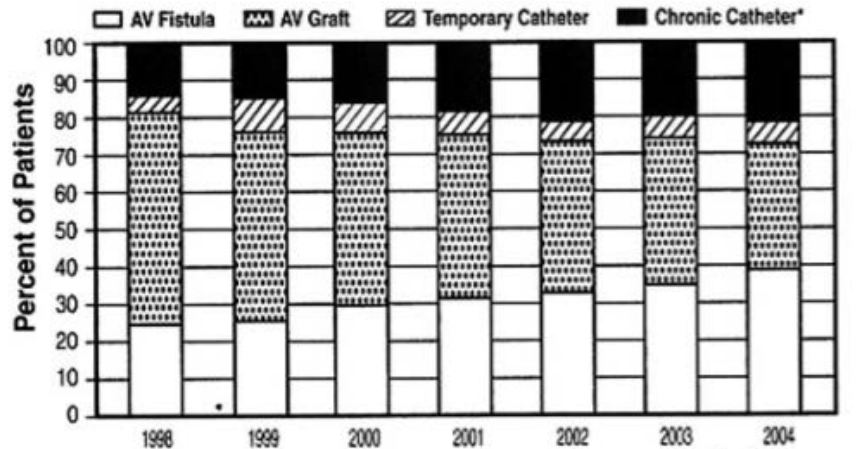
So all metrics have either stayed same or gone down from 2012 to 2015

- Prevalent AVF/AVG from **79% to 68.6%**
- CVC gone from **17.7% to 27.4%** from 2011 to 2015

Fistula first and distal 1st results in more failure

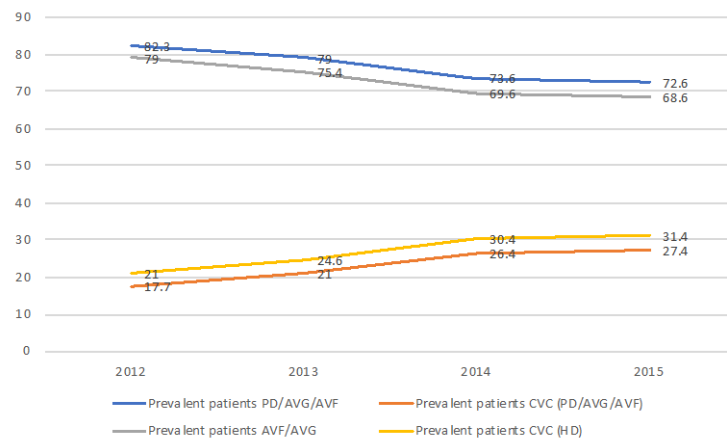
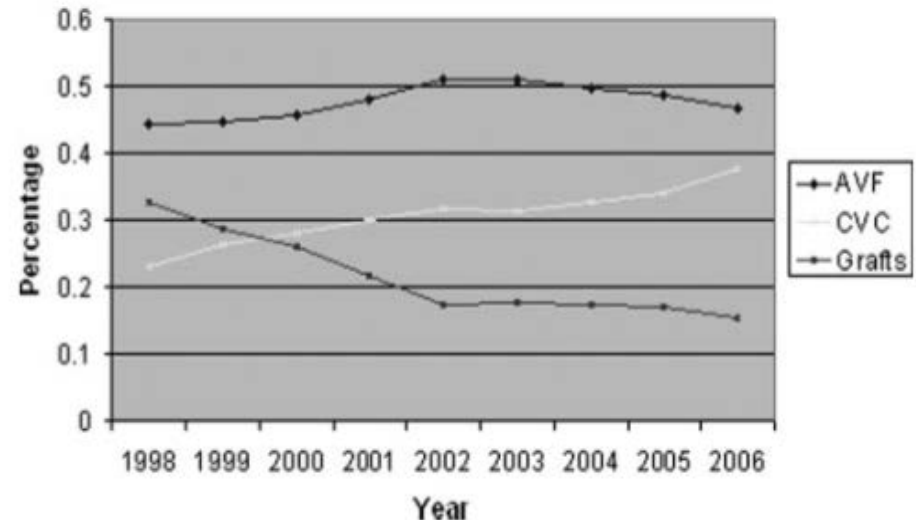
FF caused an increase in long term CVC use!

Vascular Access Trends



*Chronic catheter defined as use of a catheter access continuously for 90 days or longer.

Proportion of Access Types Used (by Access Days)



Lok C. Clin J Am Soc Nephrol 2: 1043-1053, 2007

Both showed 10% increase in CVC use

The Renal Association guidelines on vascular access for haemodialysis recommends 85% of all prevalent patients on haemodialysis should dialyse using an AV fistula.

Only seven of 38 centres (Birmingham Heartlands, Derby, Stoke, Truro, York, Dorset, Salford) reporting prevalent data were achieving close to the RA recommendations. Twenty-eight centres were more than three standard deviations and three centres were more than two standard deviations below this target (figure 11.19)

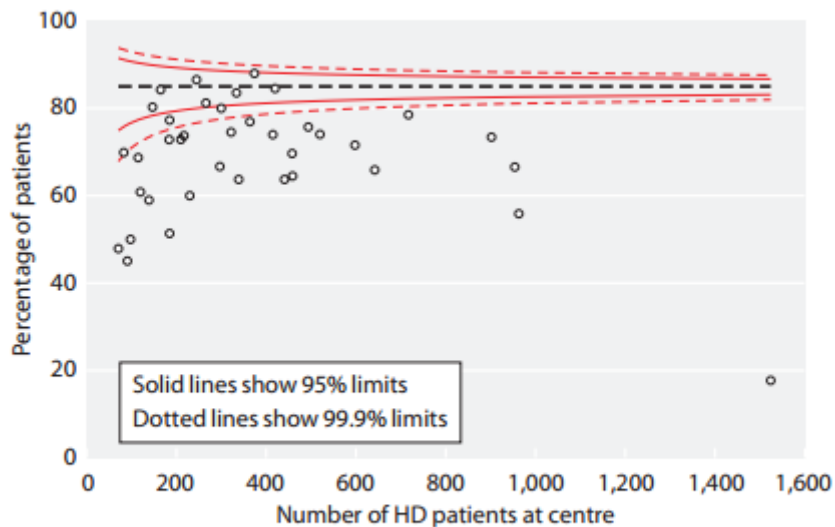
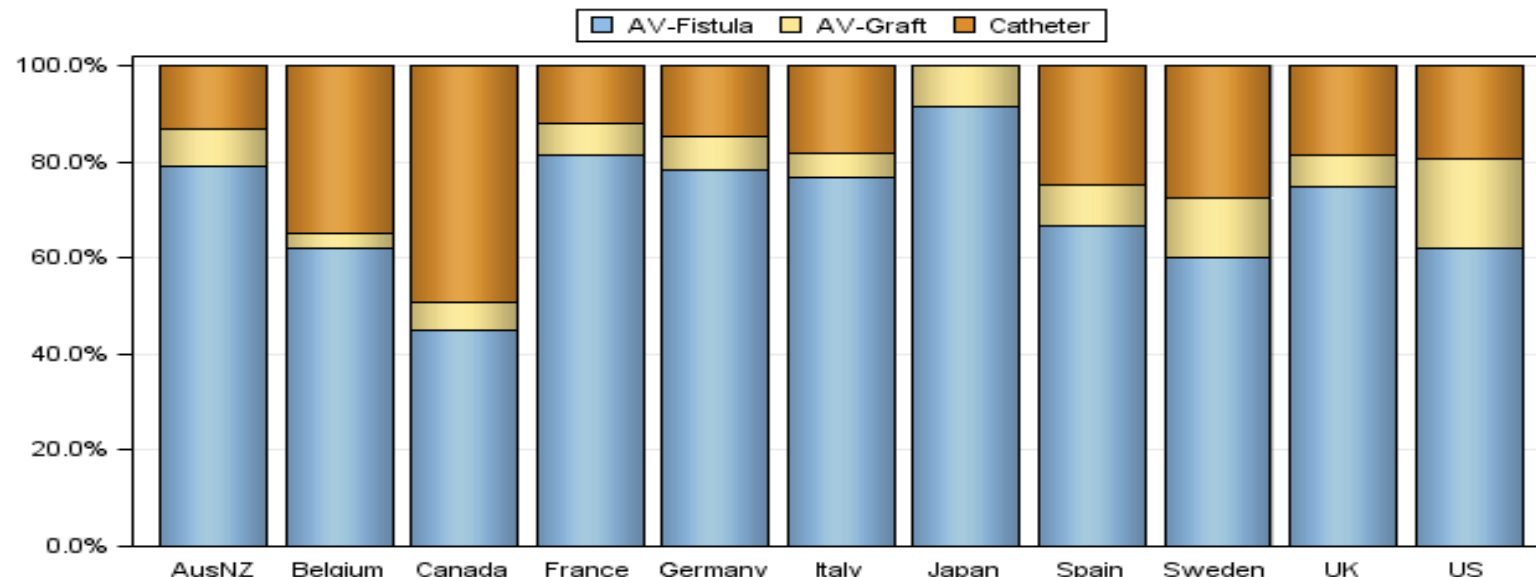


Fig. 11.19. Funnel plot of the percentage of prevalent HD patients dialysing using an AVF

Translated:
The target is unachievable

DoPPS

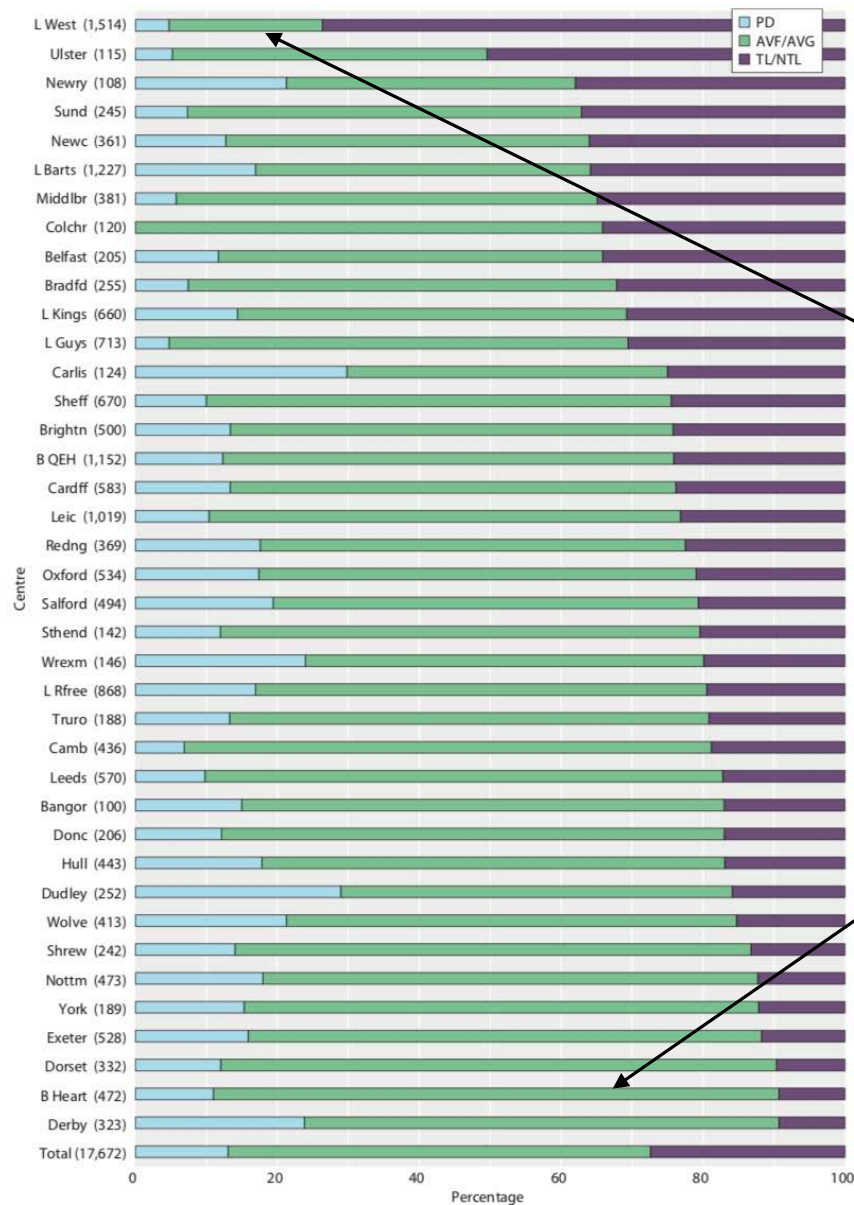
DOPPS 4 (2011) Vascular access in use at cross-section, by country



AV-Fistula (N Ptns)	336	283	213	396	512	451	1,377	361	312	336	2,551
AV-Fistula (Wgtd %)	79.1%	61.8%	45.0%	81.3%	78.3%	76.7%	91.4%	66.6%	60.1%	75.0%	62.0%
AV-Graft (N Ptns)	41	16	28	35	45	24	130	41	61	32	724
AV-Graft (Wgtd %)	7.9%	3.2%	5.9%	6.7%	6.9%	4.9%	8.5%	8.5%	12.3%	6.6%	18.5%
Catheter (N Ptns)	57	159	219	64	92	114	2	149	142	76	717
Catheter (Wgtd %)	13.0%	35.0%	49.1%	11.9%	14.8%	18.4%	0.1%	24.9%	27.7%	18.5%	19.5%

Among patients using native AV fistula, AV graft, or catheter

Represents 336/23000 = 1.5% sample!!



AVF/AVG
<20% to 80%

Fig. 12.12. Prevalent dialysis access by centre for patients in the 2015 Multisite Dialysis Access audit
Centre size (patient numbers) in brackets. Centres are sorted by proportion of patients initiating RRT with a HD catheter. HD – haemodialysis; PD – peritoneal dialysis; AVF – arteriovenous fistula; AVG – arteriovenous graft; TL – tunnellled line; NTL – non-tunnellled line

AVG vs AVF

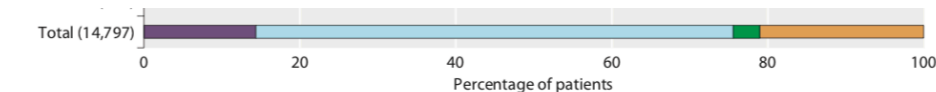
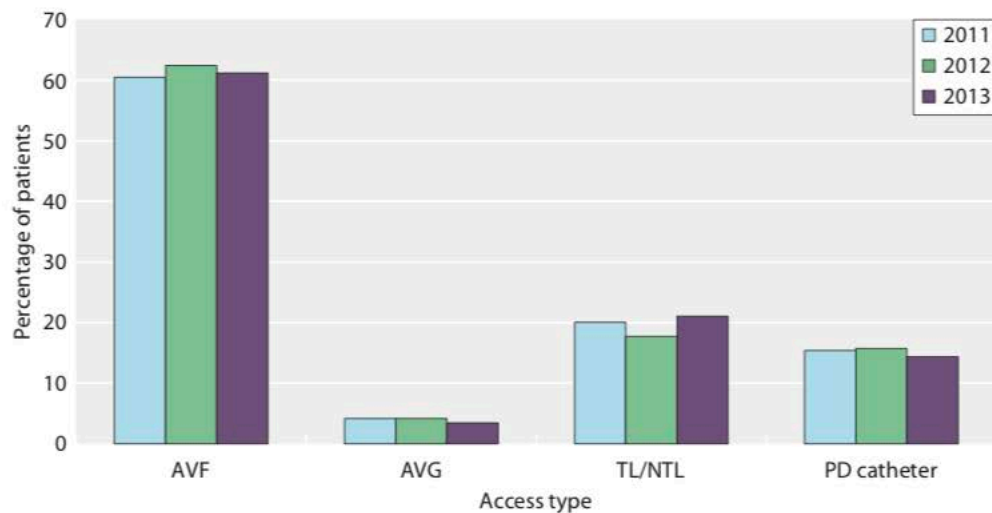


Fig. 10.21. Type of dialysis access in prevalent patients stratified by centre
PD = peritoneal dialysis; AVF = arteriovenous fistula; AVG = arteriovenous graft; TL = tunnelled line; NTL = non-tunnelled line

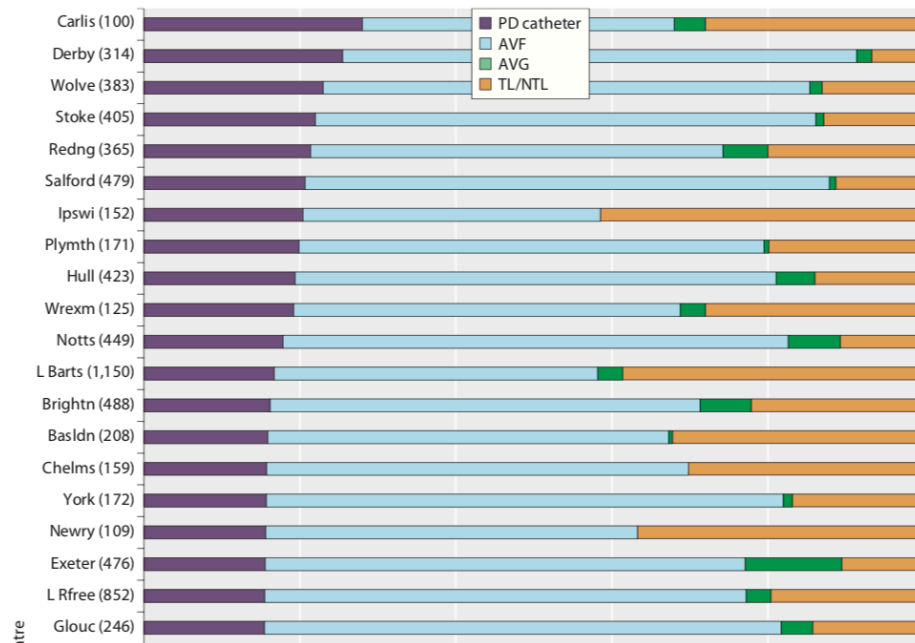


Fig. 10.22. Percentage of prevalent dialysis patients with each access type, by year
AVF = arteriovenous fistula;
AVG = arteriovenous graft; TL = tunnelled line; NTL = non-tunnelled line;
PD = peritoneal dialysis

Variation in practice

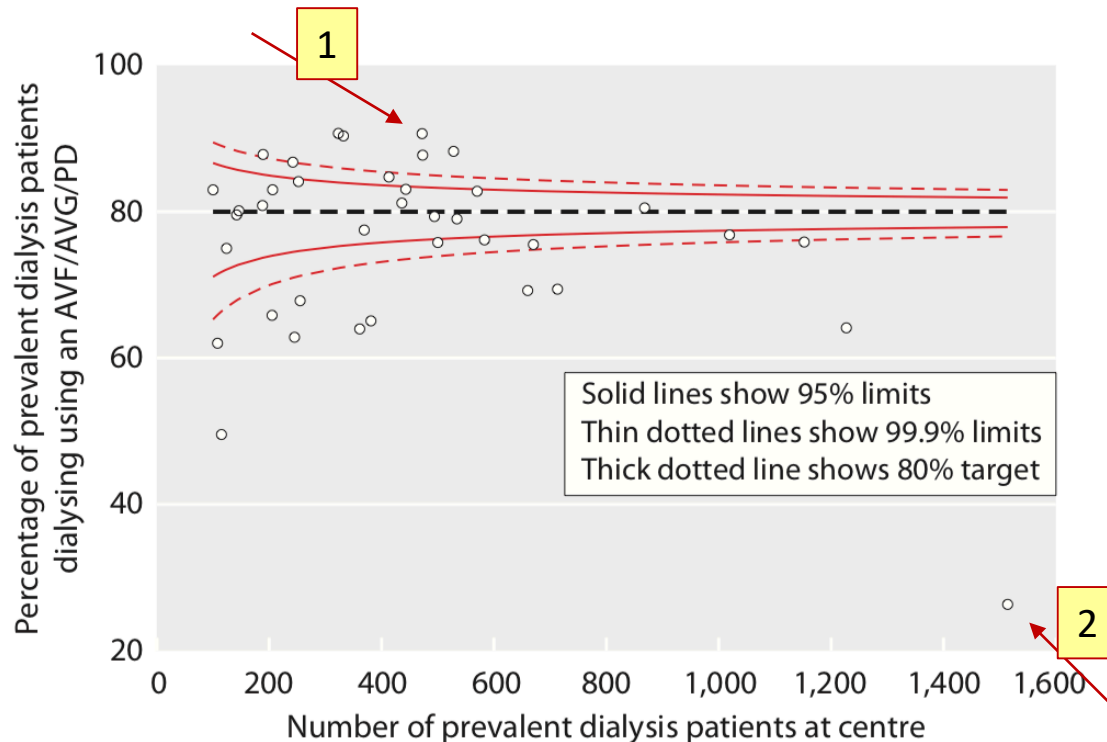


Fig. 12.11. Funnel plot of the percentage of prevalent patients in the 2015 Multisite Dialysis Access audit receiving PD or HD via AVF/AVG

Unit 1

VA rate >80%

5YR pt survival 49%

Unit 2

CVC rate 80%

5YR Pt survival 64%

Large variation in % prevalent dialysis
by AVF/AVG/PD

Lessons from BPT and PbR?

1. Early referral to a surgeon results in more AVF/AVGs

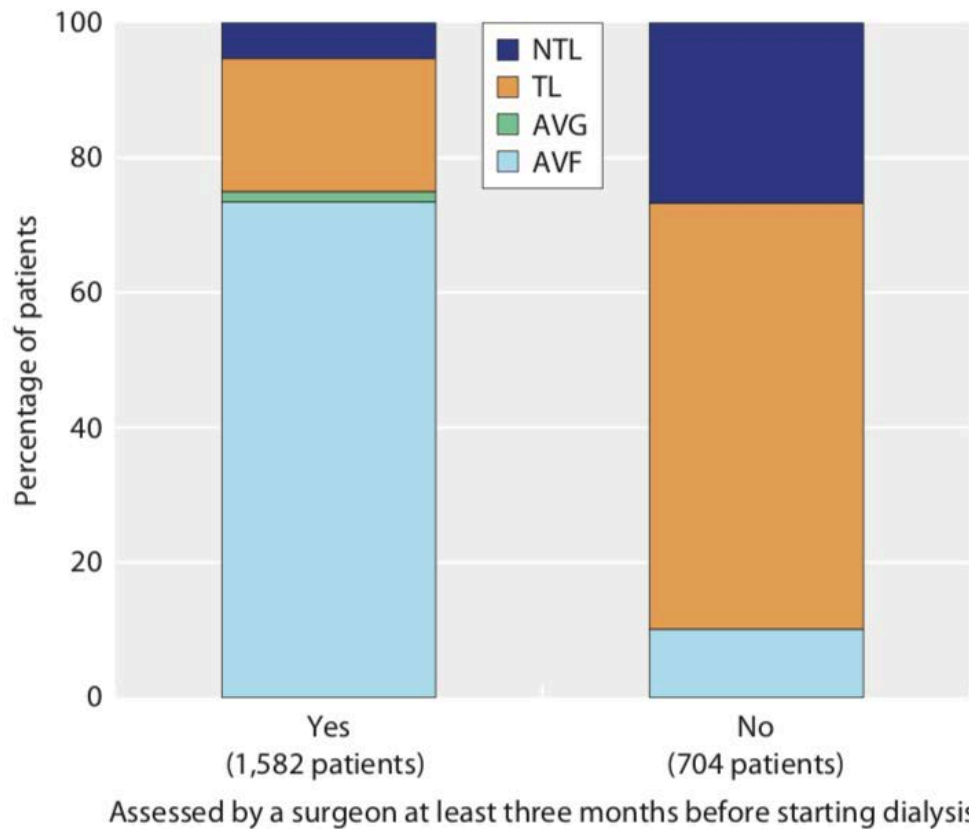


Fig. 10.15. Type of haemodialysis access stratified by surgical assessment

AVF = arteriovenous fistula; AVG = arteriovenous graft;
TL = tunnelled line; NTL = non-tunnelled line

If assessed by a surgeon within 3mo of starting

70% on AVF/AVG
30% on CVC

If late presenter
<10% on AVF/AVG

❖ Guidelines for referral for creation of VA

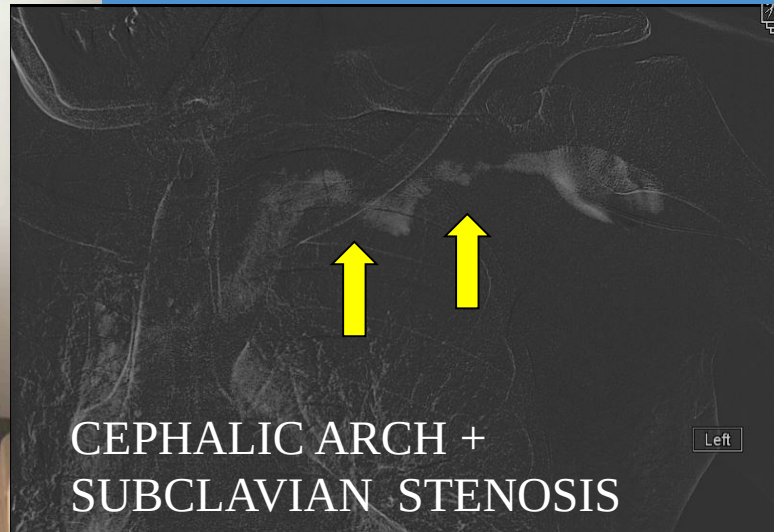
❖ North American guidelines

- ❖ KDOQI guidelines propose an AVF to be formed at least 6 months before the anticipated start of HD to allow appropriate timing to enable a working AV-fistula to be functional

❖ eGFR between 15 and 29 ml/min (ie. KDIGO Stage G4)

❖ UK renal registry guidelines recommend this should be determined by:

- ❖ Rate of decline of kidney function
 - ❖ Co-morbidities
 - ❖ the surgical pathway
 - ❖ AV-access should be created between three months and not more than one year from the expected date of dialysis commencement
- ## ❖ ERBP suggests referral to a surgeon at stage 4 of their CKD (GFR <30ml/min/1.73m²)
- ## ❖ Or earlier in case of rapidly progressive nephropathy or specific clinical conditions such as diabetes or severe peripheral vascular disease.



Very early access placement may be practiced resulting in unnecessary surgery and complications of access in patients who are not dialysis dependent.

55m ex-chef AVF formed 7 years ago when GFR was 18
Never dropped below 20 since
Swollen arm - Unable to do his job
Needs intervention

Create access too early
Multiple fails or complications
= more CVCs
= more complex access
= more ESVA

Training and service



- No interventional nephrology
- Rest of service is based on enthusiasm
- Surgical and nephrology curriculum – little emphasis on training

Dialysis Therapies: Haemodialysis – General Principles and Management

To provide the trainee with skills and knowledge to be able to undertake the planning of haemodialysis, its prescription and measurement of its adequacy

Knowledge	Assessment Methods	GMP
Describes the methods of creating vascular access for haemodialysis	CbD	1
Describes the means to deliver purified water, the necessary standards and methods of assessing these	SCE	1,2
Recalls the principles of haemodialysis and knows the effects of changes in treatment length and frequency, different dialysis membranes, dialysate fluids	CbD, SCE	1,2
Describes the theory of sodium profiling and ultrafiltration	CbD, mini-CEX, SCE	1,2
Recalls the methods used to assess adequacy of haemodialysis	CbD, mini-CEX, SCE	1,2
Describes the evidence base supporting treatment targets for adequate haemodialysis	CbD, mini-CEX, SCE	1,2

Skills

Adjusts the prescription of haemodialysis and monitor change	CbD, mini-CEX	1,2,3
Advices on ultrafiltration, sodium profiling and the use of different dialysate solutions	CbD, mini-CEX	1,2,3
Discusses the therapeutic and lifestyle implications of home versus hospital-based haemodialysis with a patient and carers	CbD, mini-CEX	1,2,3
Assesses the suitability of different methods of vascular access	CbD, mini-CEX	1,2,3
Organises the day-to-day management of a haemodialysis unit	CbD, mini-CEX	1,2,3

Behaviours

Appreciates the role of nurses and other health care professionals in the day-to-day management of haemodialysis and changes in prescription	MSF	2,3,4
Works closely with management and purchasers to ensure cost-effective treatment	MSF	2,3,4

Level Descriptor

- 1 Understands basic principles of dialysis treatment and how this is achieved with standard haemodialysis. Able to prescribe a basic dialysis session.
- 2 Understands haemodialysis treatment in greater depth (water purity, haemodiafiltration, sodium profiling), able to prescribe, adjust and monitor treatment adequacy
- 3 Can manage haemodialysis treatment in the wider context of CKD5 at individual and service provision level. Experience in leading a dialysis quality assurance meeting with the MDT

Dialysis Therapies: Haemodialysis – Complications

To provide the trainee with skills and knowledge to be able to manage the complications of haemodialysis

Knowledge	Assessment Methods	GMP
Knows the complications of arterio-venous fistulae and artificial grafts including thrombosis, haemorrhage, infection, stenoses and poor flow	CbD, mini-CEX, SCE	1,2
Defines the methods of dealing with dialysis line sepsis, poor flow and line blockage	CbD, mini-CEX, SCE	1,2
Outlines the aetiology of intradialytic hypotension and available management strategies	CbD, mini-CEX, SCE	1,2
Describes the management of hard water syndrome, air embolism and EtOH reactions	CbD, mini-CEX, SCE	1,2
Describes the pathophysiology and management of dialysis-associated amyloid	CbD, mini-CEX, SCE	1,2

Skills

Identifies and manages the complications of vascular access involving, when necessary, surgeons and radiologists	AA, CbD, mini-CEX	1,2,3
Manages dialysis-related sepsis and develops protocols with microbiologists	AA, CbD, mini-CEX	1,2,3
Develops protocols to deal with acute dialysis emergencies	AA, CbD	1,2,3

Behaviours

Appreciates the role of nurses and other health care professionals in the day-to-day management of haemodialysis and its complications	CbD,	3
Appreciates the multidisciplinary nature of management of haemodialysis complications with development of close working relationships with surgeons and radiologists in the management of vascular access complications	CbD, MSF	3

Level Descriptor

- 1 Able to initiate appropriate management for acute complications e.g. line infection/dysfunction, intradialytic hypotension)
- 2 Understands principles of preventing complications (e.g. management of access.) Able to manage complications through to their full resolution, including modality switch
- 3 Has participated in the audit, protocol development and quality control of complications

3 lines entire curriculum - VA is a small print area of HD

In practice when questioned – nephrology trainees don't get any formal training in VA

VASCULAR ACCESS (VA)

	ST4	ST6	ST8
OBJECTIVE			
To describe need for VA, common methods of VA, establish VA and manage complications of VA			
KNOWLEDGE			
Anatomy of upper and lower limb arteries and veins	3	4	4
List indications for VA	3	4	4
Knowledge of methods of renal support; advantages and disadvantages	3	4	4
Physiology of arterio-venous fistulae	2	3	4
Knowledge of conduit material	2	3	4
List complications of VA	3	4	4
Knowledge of preoperative investigations including ultrasound	2	3	4
CLINICAL SKILLS			
Pre-operative assessment and choice of VA	1	2	4
Arrange appropriate investigations	1	2	4
Ultrasound assessment of patient needing vascular access	1	1	3
TECHNICAL SKILLS			
Radio-cephalic AVF	1	2	4
Brachiocephalic fistula	1	2	4
Basilic vein transposition AV fistula	1	2	4
Create forearm loop graft	1	2	3
Create thigh loop graft	1	2	3
Saphenous vein transposition AV fistula	1	2	3
On-table fistulogram/angioplasty	1	2	3
Graft thrombectomy and revision	1	2	3
Ligation/excision of fistula or graft	1	2	4
DRIL or other salvage procedure	1	2	3
Complex revision procedures	1	1	3
Percutaneous fistulography and endovascular intervention	1	1	2
Ultrasound-guided cannulation of jugular vein and femoral artery	1	2	3
Insert central venous dialysis catheter	1	2	3
Insert peritoneal dialysis catheter	2	3	4

Vascular Surgery Curriculum

Is barely any better

Its based on
procedures not on
pathway

http://www.vascularsociety.org.uk/wp-content/uploads/2012/11/vascular_final_curriculum_amended_15.8.12_version_2.pdf

Conclusions

- AVF 65-75% AVG 5-10% CVC 20-30%
- Quality initiatives resulted in increased CVC use
- Focus on numbers not on patients
- Training and service has (a lot of) potential for improvement

Thank you – save the dates



The banner features the logos for the VASBI (Vascular Access Society of the British Isles) and the Vascular Access Society at the top. Below them is a navigation menu with links: Welcome, Committees, Programme, Rotterdam, Venue, Partners, and Contact. The main image shows a busy indoor market or exhibition hall. A red triangular overlay on the left contains the text: "11TH CONGRESS OF THE VASCULAR ACCESS SOCIETY", "11-13 APRIL 2019, DE DOELEN ICC", and "ROTTERDAM, THE NETHERLANDS". A red button with the text "Register now" and a right-pointing arrow is located in the top right corner of the image area.

11TH CONGRESS OF
THE VASCULAR
ACCESS SOCIETY
11-13 APRIL 2019, DE DOELEN ICC
ROTTERDAM, THE NETHERLANDS

Register now >

April 11-13th 2019

<http://www.vas2019.com/rotterdam>



The banner features a large stylized "CX" logo on the left, with the words "International Symposium" and "CHARING CROSS" to its right. On the far right, the dates and location are listed: "15-18 APRIL 2019", "MONDAY-THURSDAY", and "OLYMPIA GRAND • LONDON • UNITED KINGDOM". The background of the banner shows a faint, stylized illustration of the London skyline with various buildings and a bridge.

International Symposium
CHARING
CROSS

15-18 APRIL 2019
MONDAY-THURSDAY
OLYMPIA GRAND • LONDON • UNITED KINGDOM