

## PREVALENCE AND CORRELATES OF VASCULAR ACCESS USE AMONG HAEMODIALYSIS PATIENTS IN THE IRISH HEALTH SYSTEM

Wael F. Hussein<sup>1,3</sup>, Husham Mohamed<sup>1,3</sup>, Ali Sheikhi<sup>2</sup>, Liam Plant<sup>4,5</sup>, Cathal Walsh<sup>2,6</sup>, Austin Stack<sup>1,3,6</sup>

<sup>1</sup> Graduate Entry Medical School, University of Limerick. <sup>2</sup> Division of Mathematics and Statistics, University of Limerick.

<sup>3</sup> Division of Nephrology, Department of Medicine, University Hospital Limerick. <sup>4</sup> Department of Renal Medicine, University College Cork.

<sup>5</sup> National Renal Office, HSE Clinical Programmes and Strategy Division. <sup>6</sup> Health Research Institute, University of Limerick.

### INTRODUCTION

- Central venous catheters (CVC) are associated with substantial morbidity and mortality when compared with an arteriovenous (AV) fistula or graft.
- Information on patterns of vascular access use among haemodialysis (HD) patients in Ireland is lacking.
- The aim of this study was to describe the patterns of vascular access use among HD patients in the Irish health system.

### OBJECTIVES

- To describe patterns of vascular access in use in chronic HD patients in 2015 and 2016.
- To report the distribution of vascular access type by patient characteristics, comorbid conditions and hospital group affiliation.
- To investigate factors associated with vascular access type in chronic HD patients in 2016.

### METHODS

#### Study Design

- We used data from the National Kidney Disease Clinical Patient Management System (KDCPMS).
- Data on vascular access use was obtained for patients on HD in Dec 2015 and in Dec 2016.
- We only included adult patients receiving HD at units with full KDCPMS implementation at each time point. Patients on HD for less than 90 days at each time point were excluded.

- Demographic characteristics, primary cause of ESKD, comorbid conditions, and hospital group affiliation were extracted for prevalent HD receiving HD in Dec 2016.

#### Statistical Analysis

- Comparisons between groups were conducted using chi-square and t-tests while multi-variable logistic regression explored associations using adjusted odds ratios (AOR) and 95% Confidence intervals (CI)

## RESULTS

- Data were available for 1,157 and 1,278 adult prevalent HD patients in 2015 and 2016 respectively.
- Average age was 65 (SD 15) years, with 30% of patients age 75 years or older, and 63% were male. Baseline characteristics are described in Table 1.

#### Prevalence of CVC use:

- The prevalence of catheter use was 52% overall and this did not change from 2015 to 2016.

#### Differences in prevalence of CVC use:

- Catheter use varied significantly by age group, sex and primary kidney disease – Table 1.

- Catheter use also varied significantly across Hospital Groups (from 46% in Group D to 67% in Group B,  $p=0.015$ ) – see Figure 1.

#### Factors associated with CVC use:

- Model 1 was adjusted for age group, sex, comorbid conditions and hospital networks.
- No significant differences were observed across hospital groups following adjustment.
- Model 2 adjusted for age group, sex and comorbid conditions. Factors associated with higher CVC use were: age group 75 years or older (compared to <45 years), female sex and diabetes. Hypertension was associated with lower use of CVC. See Figure 2.

Table 1: Baseline characteristics of chronic HD patients in Dec 2016 by type of vascular access

	n	AV access	CVC	p
<b>Total</b>	1278	610 (48%)	668 (52%)	
<b>Age (years)</b>	1278	63 ± 15	66 ± 15	0.1
<b>Age group</b>	1278			0.007 *
< 45 years	159	83 (52%)	76 (48%)	
45 - 64	400	212 (53%)	188 (47%)	
65 - 74	333	155 (47%)	178 (53%)	
75+	386	160 (41%)	226 (59%)	
<b>Sex</b>	1278			<0.0001 *
Female	473	183 (39%)	290 (61%)	
Male	805	427 (53%)	378 (47%)	
<b>Primary Kidney Disease (13 missing)</b>	1265			<0.0001 *
Diabetes	241	111 (46%)	130 (54%)	
Hypertension	111	62 (56%)	49 (44%)	
Glomerulonephritis	244	125 (51%)	119 (49%)	
Cystic	80	55 (69%)	25 (31%)	
Other urologic	111	62 (56%)	49 (44%)	
Other cause	118	55 (47%)	63 (53%)	
Unknown/missing	360	140 (39%)	220 (61%)	

Age: mean ± SD. Other variables: n and proportion within the row characteristics

Figure 1: Vascular access type by hospital group affiliation ( $p = 0.015$ )

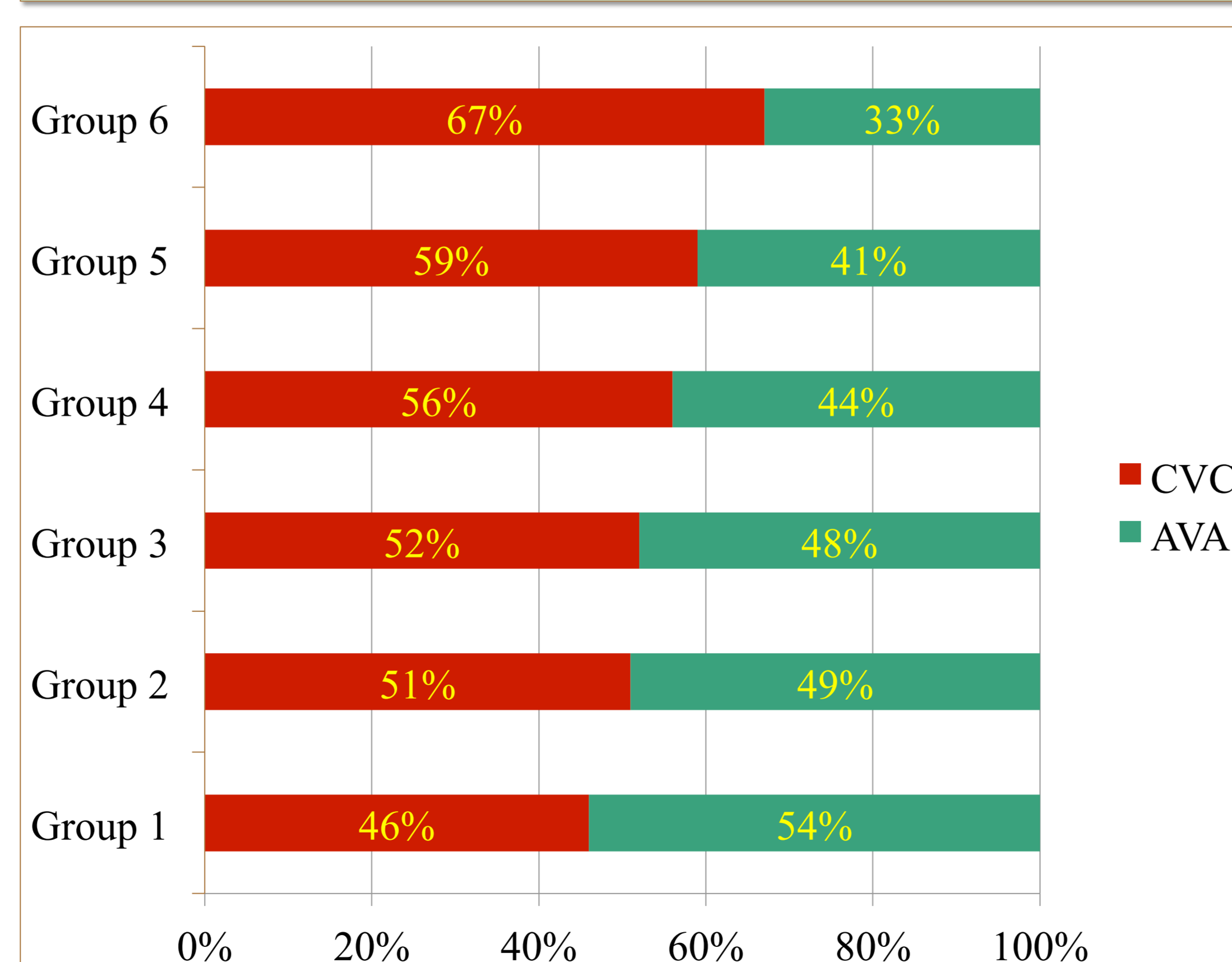
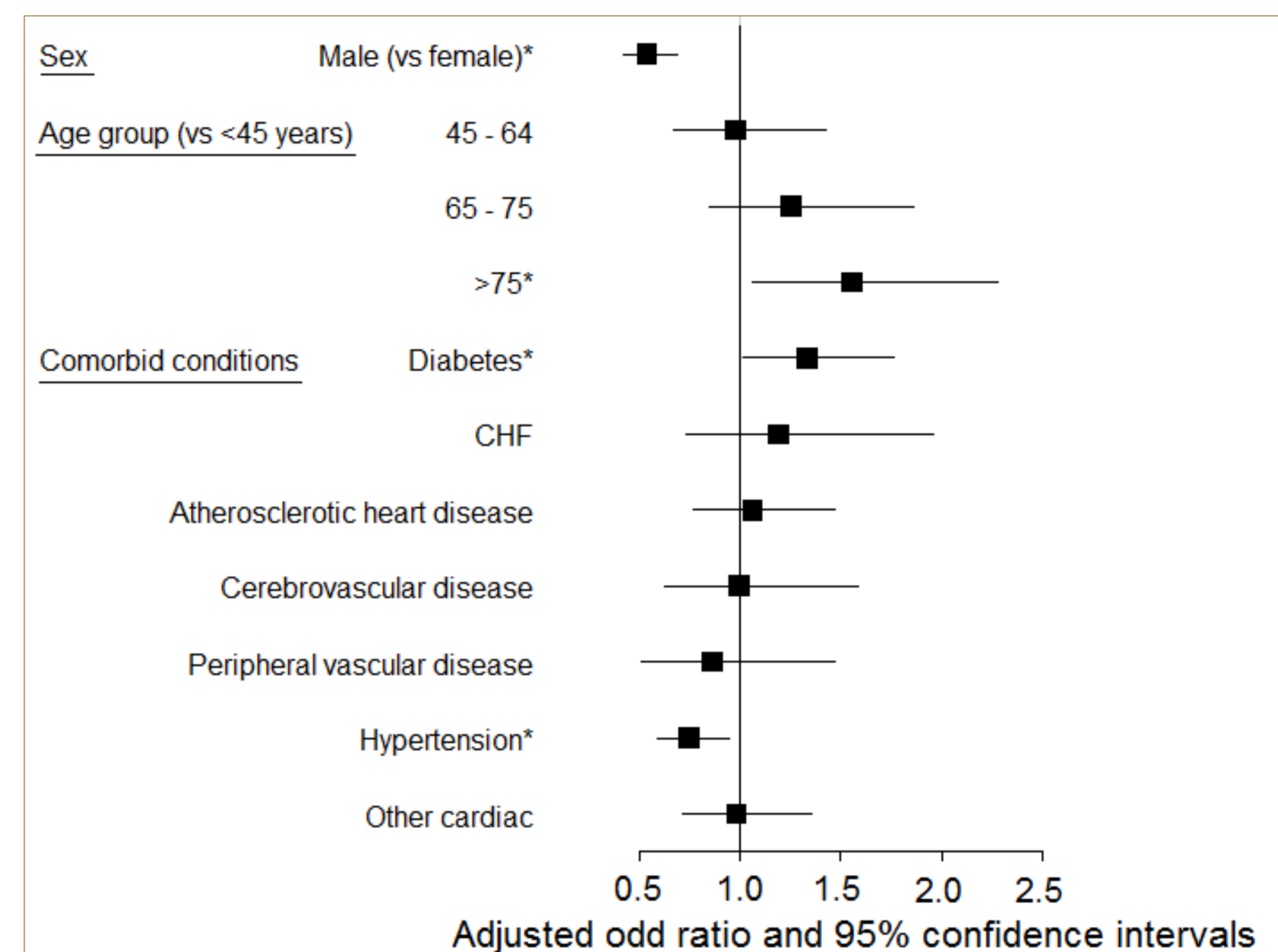


Figure 2: Factors associated with CVC use in chronic HD patients receiving dialysis in Dec 2016



## CONCLUSIONS

- Tunnelled dialysis catheters are the predominant type of vascular access among prevalent HD patients and are associated with advancing age, women and diabetes.
- Although variability exists across hospital groups, this was explained by differences in patient-related factors.
- The availability of national data on vascular access should help inform policy initiatives and drive quality improvement programs in haemodialysis.