

## THE STATE OF VASCULAR ACCESS AND A COMPARISON OF THE UK TO OTHER EUROPEAN AND NORTH AMERICAN COUNTRIES

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The Dialysis Outcomes and Practice Patterns Study (DOPPS) has described numerous aspects of vascular access (VA) use, survival and patient outcomes based on data collected from nationally representative samples of >300 dialysis units and >25,000 HD patients in Australia, Belgium, Canada, France, Germany, Italy, Japan, Spain, Sweden, UK and US between 1996-2004.

In 2002, native arteriovenous fistulae (AVF) were the major VA among prevalent HD patients, with AVF use ranging from 91% (Japan), 79-85% (FR, GE,IT,SP), 72% (ANZ), 68% (UK) to 53-60% (BE, CA, SW). In contrast, among prevalent HD patients in the US, only 30% are using an AVF and 42% a graft.

The prevalence of catheter use has increased substantially in some countries during the last 5 years, now ranging from 2% (Japan), 5% (GER), 9-12% (IT,SP,FR,ANZ), 26-28% (UK,SW,US) to 32-38% (CA,BE). Among new ESRD patients initiating HD, AVF were used by 16-19% in US and CA, 49% in Europe and ANZ, and 79% in Japan.

Prior use of a catheter was associated with a significantly greater failure rate for subsequently used AVF and grafts (RR=1.8 for failure of AVF if patient had catheter previously,  $p<0.01$ ). Furthermore, catheters displayed 5-8 fold higher VA infection rates compared with AVF or grafts.

Patients in facilities with a high prevalence of catheter use ( $\geq 28\%$ ), had substantially and significantly higher adjusted relative risks for mortality, all-cause hospitalization and hospitalization due to infection compared with patients in facilities with catheter use of  $\leq 7\%$ . Patients in facilities with high catheter use also displayed a lower mean hemoglobin concentration and a higher recombinant erythropoietin dose.

VA survival analyses indicated a nearly two fold longer survival for AVF compared with grafts. Mean number of days to first cannulation of a new AVF in new ESRD patients ranged from 25-27 days in Japan and Italy to 96-98 days in the UK and US. As currently practiced, however, AVF survival did not significantly differ for AVF that were first cannulated in 15-28 days versus  $>28$  days.

The adjusted odds ratio (AOR) of starting dialysis with a permanent VA versus a catheter was 6.1 fold higher for patients seeing a nephrologist  $>1$  month prior to starting HD. However, countries displayed only moderate differences in percent of patients having seen a nephrologist  $>1$  month prior to ESRD (country range: 75-84%). The AOR of a new ESRD patient starting HD with a permanent VA versus a catheter was 1.8 fold higher if a dialysis unit's typical time from referral until permanent VA creation was  $\leq 2$  weeks. The UK and CA displayed a much larger proportion of facilities with long delays between referral and VA creation, with 59% of dialysis units in the UK typically taking  $>4$  weeks to create a permanent access from the time of referral compared with  $\leq 10\%$  of units in many other countries.

In summary, large variation exists in VA practices across facilities and countries. These results from the DOPPS indicate multiple opportunities for improving VA practices, especially through reducing catheter use, with practice improvements likely to yield substantial benefits in patient outcomes.