A Fistula is the Least Expensive Form of Vascular Access in Terms of Total Medicare Expenditures: A CPM Cohort Study

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**Introduction**

- Clinical studies have shown fistulas to be the superior vascular access for hemodialysis (HD) patients.
- The National Kidney Foundation (NKF), in its Kidney Disease Outcomes Quality Initiative (K/DOQI) has set a target of at least 40% fistula use for prevalent HD patients; fistula use in other developed countries is often over 90%.
- Beyond the clinical advantages of using a fistula, little data is available on patients with fistulas and their associated Medicare costs compared to patients with grafts and catheters.
- Using the Centers for Medicare and Medicaid Services (CMS) Clinical Performance Measures (CPM) survey data, we studied total Medicare spending among HD patients with different vascular access types.
- Patients from two separate CPM/USRDS merged survey cohorts were chosen to better demonstrate the absolute and relative differences in expenditures among the three vascular access groups, both within and across years.

**Methods**

- We selected patients from CMS annual CPM survey data which collects information each year on vascular access, anemia management, and dialysis adequacy in a random sample of 8,500+ in-center adult HD patients.
- Patients with Medicare as their primary payor from two specific CPM/USRDS merged survey cohorts were chosen for the study.
  - 1999: n = 5,862
  - 2003: n = 6,187
- We used an intent-to-treat model in which each patient was followed for one year from 1/1/1999 and 1/1/2003 respectively, and censored at dialytic death.
- CPM data element ‘Current Access Type’ was used to ascertain vascular access use in individual patients; patients with unknown or missing ‘Current Access Type’ were excluded from the study.
- Vascular access complication were determined using ICD-9 diagnosis codes 996.62 (infectious) and 996.73 (other).

**Results**

- The use of fistulas has increased from 27.3% to 33.1%, while graft placements have dropped from 54% to 41.5%.
- Catheter use has risen from 18.7% to 25.4% between 1999 and 2003.
- Rates of fistula use are increasing but remain below the K/DOQI target.
- Beyond the clinical advantages of using a fistula, little data is available on patients with fistulas and their associated Medicare costs compared to patients with grafts and catheters.
- Men were more likely to have fistulas, while African American women were more likely to have grafts.
- As expected, patients with diabetes were less likely to have fistulas.
- Patients with fistulas consistently had the lowest per person per year Medicare expenditures ($43,703 & $52,751), while catheter patients incurred the highest expenditures ($61,341 & $69,893) in both the 1999 and 2003 CPM/USRDS merged cohorts.
- Patients with fistulas were found to have the lowest admission rates for vascular access complications (0.12 & 0.12), while those with catheters had the highest (0.47 & 0.42).

**Conclusions**

- Rates of fistula use are increasing but remain below the K/DOQI target.
- Hospital admissions for vascular access complications have decreased; HD patients with fistulas had the lowest hospital admission rates.
- Hospitalization expenditures for vascular access are decreasing (as a percent of total Medicare expenditures).
- A fistula is the least expensive form of vascular access in terms of total Medicare expenditures, $43,703 and $52,751 in 1999 and 2003 respectively.
- These estimates contain unmeasured co-morbidities, especially for patients with catheters.
- Because selection biases may confound the analysis, these results should be interpreted with caution.
- These data suggest that there are both clinical and economic benefits to the use of fistulas.