

Impact of Hemodialysis Catheter Dysfunction on Utilization of Medical Services

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Purpose: To evaluate the impact on medical services of catheter dysfunction, defined by National Kidney Foundation Kidney Disease Outcomes Quality Initiative guidelines as failure to attain an extracorporeal blood flow rate (BFR) above 300 mL/min.

Methods: We conducted a retrospective cohort study using data from DaVita, Inc. merged with the United States Renal Data System. DaVita data contained records for each dialysis session, including date of service, access type, planned and actual BFR, and length of dialysis session. Records for missed dialysis sessions contained the date and reason for missing the session, including "access problems." Patients were included if they had ≥ 8 consecutive weeks of catheter dialysis between 08/2004 and 12/2006. They were followed from first to last catheter dialysis session. Catheter dysfunction was defined as actual BFR < 300 mL/min despite a planned BFR ≥ 300 mL/min. Two approaches, multivariate repeated measures and case-crossover, were used to analyze associations between catheter dysfunction and patterns of medical services.

Results: Of 44,470 patients in the merged data set, 9,707 (22%) met the study criteria. The average age was 62, 53% were female, and 40% were black. The median length of catheter dialysis was 190 days. There were 1,075,701 catheter dialysis sessions, 70,361 (6.5%) met the definition of catheter dysfunction, and 6,331 (65.2%) patients had ≥ 1 session with catheter dysfunction. In multivariate repeated measures analysis, catheter dysfunction was associated with increased odds of a missed session due to access problems (OR 2.50; $P < 0.001$), receiving an access-related procedure (OR 2.10; $P < 0.001$), either missed session due to access problems or access-related procedure (OR 2.21; $P < 0.001$), and all-cause hospitalization (OR 1.10; $P = 0.001$). It was not associated with length of dialysis. Case-crossover results were similar.

Conclusion: Catheter dysfunction is associated with increased use of medical services and disruptions in dialysis treatment.