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Synopsis from the article: [Shurraw S, Zimmerman D. Vascular Access Complications in Daily Hemodialysis: A Systemic Review of the Literature. \*Minerva Urologicae Nephrologica\* 2005;57:151-63](#)

**Background:** The quality and quantity of life for patients with end-stage renal disease is reduced compared to the general population. Approximately 20% of patients starting hemodialysis will die each year, predominantly due to cardiovascular disease. While much of this increased risk of death may be secondary to traditional cardiovascular risk factors, the hemodialysis procedure itself may be contributing, due to an inadequate replacement of renal function. Alternative methods of cleaning uremic toxins such as short daily hemodialysis and nocturnal hemodialysis have been associated with numerous benefits including improved blood pressure control, regression of left ventricular mass and an improvement in quality of life. Yet the use of these promising modalities remains limited, perhaps due to concerns about vascular access complications with the more frequent cannulation for arteriovenous fistulas and grafts (AVF/AVG) and connections for central venous catheters. We therefore undertook a systematic review of the literature to determine if these concerns were justified.

**Methods:** We performed a literature search using Medline from 1966-2005 using Boolean operators and the MeSH and test words: “hemodialysis” and “daily or quotidian or nocturnal” and “vascular access or fistula or graft or catheter.” Only original studies with 10 or more patients, containing quantitative data pertaining to vascular access survival, infections or other complications were included. Citations from all of the studies were also manually searched.

**Results:** Twelve studies were identified that met our inclusion criteria. Overall, daily hemodialysis, compared to conventional three times per week hemodialysis, was not associated with a higher risk of vascular access complications or vascular access failures. On the contrary, most studies showed a statistically significant decrease in complications associated with daily hemodialysis. However, in 2 different studies, there was a non-statistically significant trend toward an increased risk of AVF complications in patients on daily dialysis. In spite of this, in all studies, the AVF still appears to be the access of choice (least complications/failures) for daily hemodialysis.

**Conclusion:** Patients with ESRD have an unacceptably lower quantity and quality of life when compared to the general population. Daily hemodialysis has been associated with an improvement in cardiovascular risk factors and quality of life for patients with ESRD, yet access to these treatment options has remained limited. The concerns about the possibility of increased vascular access complications with daily hemodialysis appear to be unfounded and should not be a barrier to the increased utilization of these treatment modalities.

**Commentary by Todd S. Ing, MD**

The data collected by Dr. Zimmerman and her colleagues suggest that vascular access complications in patients treated with daily dialysis are not higher than those in patients receiving conventional thrice weekly treatments.

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