

Catheters linked with high risk of infections, heart problems, and death in dialysis patients

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Dialysis patients using catheters to access the blood have the highest risks for death, infections, and cardiovascular events compared with patients using other types of vascular access, according to an analysis appearing in an upcoming issue of the *Journal of the American Society of Nephrology (JASN)*. The authors note that more research is needed to determine individual patients' risks, however.

For [kidney disease](#) patients who must undergo dialysis, experts recommend an arteriovenous fistula, which is created by connecting patient's own vein and artery to form a long-lasting site through which blood can be removed and returned. Alternatively, a patient may use an arteriovenous graft, which is a plastic conduit between an artery and a vein. Many patients use a catheter instead for several reasons, including inadequate preparation for dialysis, avoidance of surgery or fear of needles, as attachment to the [dialysis machine](#) via a catheter does not require needles. Also, an arteriovenous fistula or graft is not possible in all patients, especially those who are sicker.

To compare different types of vascular access for dialysis, Pietro Ravani, MD, PhD (University of Calgary, Canada) and his colleagues reviewed the [medical literature](#), evaluating the associations between arteriovenous fistula, arteriovenous graft, and central venous catheter with risk for death, infection, and major heart-related events such as heart attacks and strokes. The researchers identified 67 studies comprising 586,337 participants.

Among the major findings:

- Compared with individuals with fistulas, those using catheters had a 38% higher risk of experiencing a major heart-related event, a 53% higher risk of dying, and more than double the risk of developing [fatal infections](#).
- Compared with individuals with fistulas, those with grafts had an 18% increased risk of dying and a 36% increased risk of developing fatal infections, but they did not have an increased risk of experiencing a major heart-related event.
- All analyses compared patients based on the access they achieved, irrespective of the access planned or attempted. (For example, the group of people using catheters also included patients in whom a fistula was unsuccessful.)

The findings suggest that if patients using different types of bloodstream access were of similar health, then use of catheters for hemodialysis has the highest risks for death, infections, and [cardiovascular events](#) compared with other vascular access types, and fistulas have the lowest risk. Unfortunately, patients in these studies were not of similar health: those using catheters were likely sicker and those with fistulas were likely healthier.

"Our findings are reflected in current clinical practice guidelines, which promote fistulas as the preferred form of bloodstream access in hemodialysis [patients](#), said Dr. Ravani. He added that the studies they identified were of low quality, though. "Better-quality data are needed, but not from studies with the same design as those already available. In fact, our cumulative meta-analysis shows that this information was already available 10 years ago," he explained.

More information: The article, entitled "Associations Between

Hemodialysis Access Type and Clinical Outcomes," will appear online on February 21, 2013, [doi: 10.1681/ASN.2012070643](https://doi.org/10.1681/ASN.2012070643)

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