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Choice of Hemodialysis Access in Older Adults: A Cost-Effectiveness Analysis

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Abstract

Background and objectives Although arteriovenous fistulas have been found to be the most cost-effective form of hemodialysis access, the relative benefits of placing an arteriovenous fistula versus an arteriovenous graft seem to be least certain for older adults and when placed preemptively. However, older adults' life expectancy is heterogeneous, and most patients do not undergo permanent access creation until after dialysis initiation. We evaluated cost-effectiveness of arteriovenous fistula placement after dialysis initiation in older adults as a function of age and life expectancy.

Design, setting, participants, & measurements Using a hypothetical cohort of patients on incident hemodialysis with central venous catheters, we constructed Markov models of three treatment options: (*1*) arteriovenous fistula placement, (*2*) arteriovenous graft placement, or (*3*) continued catheter use. Costs, utilities, and transitional probabilities were derived from existing literature. Probabilistic sensitivity analyses were performed by age group (65–69, 70–74, 75–79, 80–84, and 85–89 years old) and quartile of life expectancy. Costs, quality-adjusted life-months, and incremental cost-effectiveness ratios were evaluated for up to 5 years.

Results The arteriovenous fistula option was cost effective compared with continued catheter use for all age and life expectancy groups, except for 85–89 year olds in the lowest life expectancy quartile. The arteriovenous fistula option was more cost effective than the arteriovenous graft option for all quartiles of life expectancy among the 65- to 69-year-old age group. For older age groups, differences in cost-effectiveness between the strategies were attenuated, and the arteriovenous fistula option tended to only be cost effective in patients with life expectancy >2 years. For groups for which the arteriovenous fistula option was not cost saving, the cost to gain one quality-adjusted life-month ranged from $2294 to $14,042.

Conclusions Among older adults, the cost-effectiveness of an arteriovenous fistula placed within the first month of dialysis diminishes with increasing age and lower life expectancy and is not the most cost-effective option for those with the most limited life expectancy.

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frail elderly, vascular access, health care costs, geriatric nephrology
Medicare | dialysis | arteriovenous fistula | arteriovenous graft | life-expectancy | Arteriovenous Shunt, Surgical | Central Venous Catheters | Cost-Benefit Analysis | Humans | Probability | renal dialysis

Received November 11, 2016.
Accepted February 24, 2017.

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« Previous | Next Article »
Table of Contents

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Published online before print May 2017, doi: 10.2215/CJN.11631116
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Print ISSN: 1555-9041
Online ISSN: 1555-905X