EDITORIAL

Updated Guidelines on Screening for Abdominal Aortic Aneurysms

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In this issue of *JAMA*, the US Preventive Services Task Force (USPSTF) has updated its previous 2014 recommendations on screening asymptomatic adults for abdominal aortic aneurysm (AAA).[1] In addition, an updated evidence report and systematic review[2] accompanies this report from the USPSTF. These recommendations are not substantially different from the previously published recommendations.[3]

The USPSTF recommends that men aged 65 to 75 years who have ever smoked receive a 1-time screening for AAA with ultrasonography (B recommendation), as the prevalence is highest in this population—estimated to be 7%. This recommendation is based on 4 large population-based randomized clinical trials from the United Kingdom, Denmark, and Australia that found screening for AAA among men led to a decrease in AAA-related mortality and in emergency surgery for aortic rupture. The moderate net benefit also relates to the improved outcomes of interventions for AAA in this population, involving either endovascular or open repair. Reports indicate that 80% of elective aortic aneurysm repairs and 54% of operations for aneurysm rupture are now performed using endovascular repair, which has a lower perioperative mortality than open repair.[4,5]

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The USPSTF also recommends that men aged 65 to 75 years who have never smoked be selectively screened for AAA with ultrasonography (C recommendation), as the net benefit is small because the prevalence of AAA is only 2% in this population. This recommendation is based in part on information from the Aneurysm Detection Management Study (ADAM), in which patients aged 50 to 79 years with an AAA 4.0 to 4.5 cm in diameter were randomly assigned to immediate repair or surveillance. Among 126 196 patients screened in this study, 2262 were found to have an AAA and an additional 2376 patients were referred, for a total of 5038 patients eligible for the trial based on the size of their AAA. Only 1136 (23%) underwent randomization, because 1466 (29%) declined evaluation, 125 (2%) were eligible and declined randomization, and 2311 (46%) were excluded because of medical comorbidities that precluded their candidacy for an open repair, because endovascular repair was not yet available.[6] Even with endovascular repair available for the patients with greater severity of illness, emphasis has been on survival following the procedure, given the competing risk of other coexisting diseases leading to early death following the procedure. Endovascular repair is much more expensive because of the price of the device, so it is prudent to be sure that patients considered for this intervention have an acceptable life expectancy to realize the preventive benefit associated with elective AAA repair.[7]

In addition, the USPSTF recommends that women who have never smoked and have no family history of AAA not be routinely screened with ultrasonography (D recommendation), as the prevalence of AAA is low (0.03%-0.60%) in this population. The evidence for women who have smoked and have a family history was deemed insufficient (I statement) because of the inability to assess the benefits and harms of screening among women, primarily because operative mortality is higher among women with AAA than among men, even with endovascular repair.[8,9] Women, compared with men, also have longer lengths of stay (4.3 vs 2.7 days; $P = .001$) following endovascular repair, with lower chances of being discharged to home and higher readmission rates.[10] Most of these complications and poor outcomes can be explained because women present at a more advanced age with a significant AAA.[11]

Many of the AAAs detected by screening are smaller than the recommended size (5.5 cm in diameter) for intervention and repair.[6] Screening intervals are not well established because patients frequently do not adhere to recommendations for rescreening, and limited data exist to make definitive recommendations. In general, smaller AAAs (3-4 cm) can be reimaged with ultrasound once a year depending on the patient's other medical conditions. Patients with AAAs with a diameter of 4 to 5 cm should undergo repeat imaging every 6 months because it is not possible to predict which AAAs may enlarge more than 0.1 to 0.2 cm per year. Those AAAs that do enlarge by more than 0.5 cm within 6 months are considered at high risk for rupture and should be promptly repaired. As patients age, especially women, their AAAs will enlarge. That also makes the decision-making process more complex, because other medical illnesses such as heart failure and cancer may preclude interventions to repair the AAA.[11,12]

In the ADAM trial, 122 272 men and 3450 women were screened, and an AAA 3.0 cm or larger in diameter was found in 4.3% of men and 1.0% of women. The positive association of age, smoking, and family history with AAA, and the negative association of diabetes with AAA, were similar between men and women.[8] Since the publication of the ADAM study in 2001, no large prospective screening study has been conducted in the Unites States. However, a 2010 retrospective review by Kent and colleagues[13] of 3.1 million patients who had been screened by Life Line Screening between 2003-2008 estimated the incidence of AAA to be 1% in patients aged 50 to 84 years and higher in men and women smokers and lower in those with healthier lifestyles. Why are the screening rates so

low for patients at risk for having an AAA? Do their clinicians not offer the procedure? Do the patients refuse and if so why? Is the low rate of screening attributable to cost or inconvenience? Most older patients in the United States will have Medicare coverage and most in Europe will be covered by other insurance, so the cost of screening should not be an issue. Additional education for patients and clinicians to promote appropriate AAA screening is needed.

In the final follow-up study of patients enrolled in the OVER (Open Versus Endovascular Repair) study—a randomized clinical trial of 881 patients in the Veterans Administration system who had an AAA 5.0 or larger in diameter who qualified for either repair by their fitness for surgery and their anatomy for endovascular repair—the endovascular graft was durable at 15 years' follow-up.[4] However, patients who required multiple interventions to maintain vascular patency or to treat endoleaks from the graft had a higher likelihood of postoperative death. It is important for surgeons and vascular interventionists to use careful selection criteria to identify suitable patients for endovascular repair, to help ensure durable results and fewer interventions following the procedure. In the OVER trial, older patients (>70 years) had better outcomes with open repair, as they were deemed fit for that procedure.

This USPSTF report recommends additional research that will clarify many questions, including determining the true prevalence of AAA among patients who smoke and have a family history of aneurysm disease, especially in women, considering that the number of women screened has been too low to make a positive recommendation about screening. The clinical community needs to better understand the aneurysm rupture rate in women with a smaller size of AAA than men.[14] Additionally, more information is needed to understand growth rates of smaller AAAs to help determine how frequently to screen once a small AAA is found. The ability to detect and treat AAA in diverse and underserved populations also would be enhanced by screening programs. Vascular registries need to be used to help the screening process, as it appears that patients in registries may be more adherent with follow-up care.

Precision screening recommendations are possible. But more information is needed about the prevalence and growth rates of AAA in men and women with diverse backgrounds so that care—including screening, follow-up, and treatment—can be individualized, and outcomes for patients with AAA can be improved.

ARTICLE INFORMATION

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Conflict of Interest Disclosures: None reported.

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