Long-term Outcomes of the Western Australian Trial of Screening for Abdominal Aortic Aneurysms: Secondary Analysis of a Randomized Clinical Trial

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Question Does screening older men for abdominal aortic aneurysms (AAAs) reduce mortality from AAAs in the long term?

Findings In this randomized clinical trial of 38,480 men (aged 64-83 years) in Western Australia, use of administrative databases, such as the electoral roll, to identify and invite the men for AAA screening increased the detection rate and number of elective operations in the screened group, but mortality was not significantly reduced.

Meaning It is unlikely that a national AAA screening program will be effective in an Australian health care setting.
Abstract

**Importance**  Mortality from ruptured abdominal aortic aneurysms (AAAs) remains high. The benefit of screening older men for AAAs needs to be assessed in a range of health care settings.

**Objective**  To assess the influence of screening for AAAs in men aged 64 to 83 years on mortality from AAAs.

**Design, Setting, and Participants**  This randomized clinical trial performed from April 1, 1996, through March 31, 1999, with a mean of 12.8 years of follow-up (range, 11.6-14.2 years) included a population-based sample from a single metropolitan region in Western Australia identified via the electoral roll. Data analysis was performed from June 1, 2015, to June 1, 2016.

**Interventions**  Randomization to an invitation to undergo ultrasonography of the abdominal aorta or a control group without invitation.

**Main Outcomes and Measures**  Surgery for and mortality from AAA.

**Results**  A total of 49,801 men aged 64 to 83 years were identified for the study. Men living too far from screening centers (n=8671) or who died before invitation (n=2650) were excluded, resulting in 19,249 men in the invited group and 19,231 controls (mean [SD] age, 72.5 [4.6] years; 95% white). Of 19,249 men invited for screening, 12,203 (63.4%) attended. There were more elective operations (536 vs 414, \( P < .001 \)) and fewer ruptured AAAs (72 vs 99, \( P = .04 \)) in the invited group compared with the control group. Overall, there were 90 deaths from AAAs in the invited group (mortality rate, 47.86 per 100,000 person-years; 95% CI, 38.93-58.84) and 98 in the control group (52.53 per 100,000 person-years; 95% CI, 43.09-64.03) for a rate ratio of 0.91 (95% CI, 0.68-1.21). For men aged 65 to 74 years, the AAA mortality rate in the invited group was 34.52 per 100,000 person-years (95% CI, 26.02-45.81) compared with 37.67 per 100,000 person-years (95% CI, 28.71-49.44) in the control group for a rate ratio of 0.92 (95% CI, 0.62-1.36). The number needed to invite for screening to prevent 1 death from an AAA in 5 years was 4784 for men aged 64 to 83 years and 3290 for men aged 65 to 74 years. There were no meaningful differences in all-cause, cardiovascular, and other mortality risks.

**Conclusions and Relevance**  Use of the electoral roll to identify and invite men aged 64 to 83 years for screening for AAAs had no significant effect on the overall mortality from AAAs.

**Trial Registration**  isrctn.org Identifier: ISRCTN16171472
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