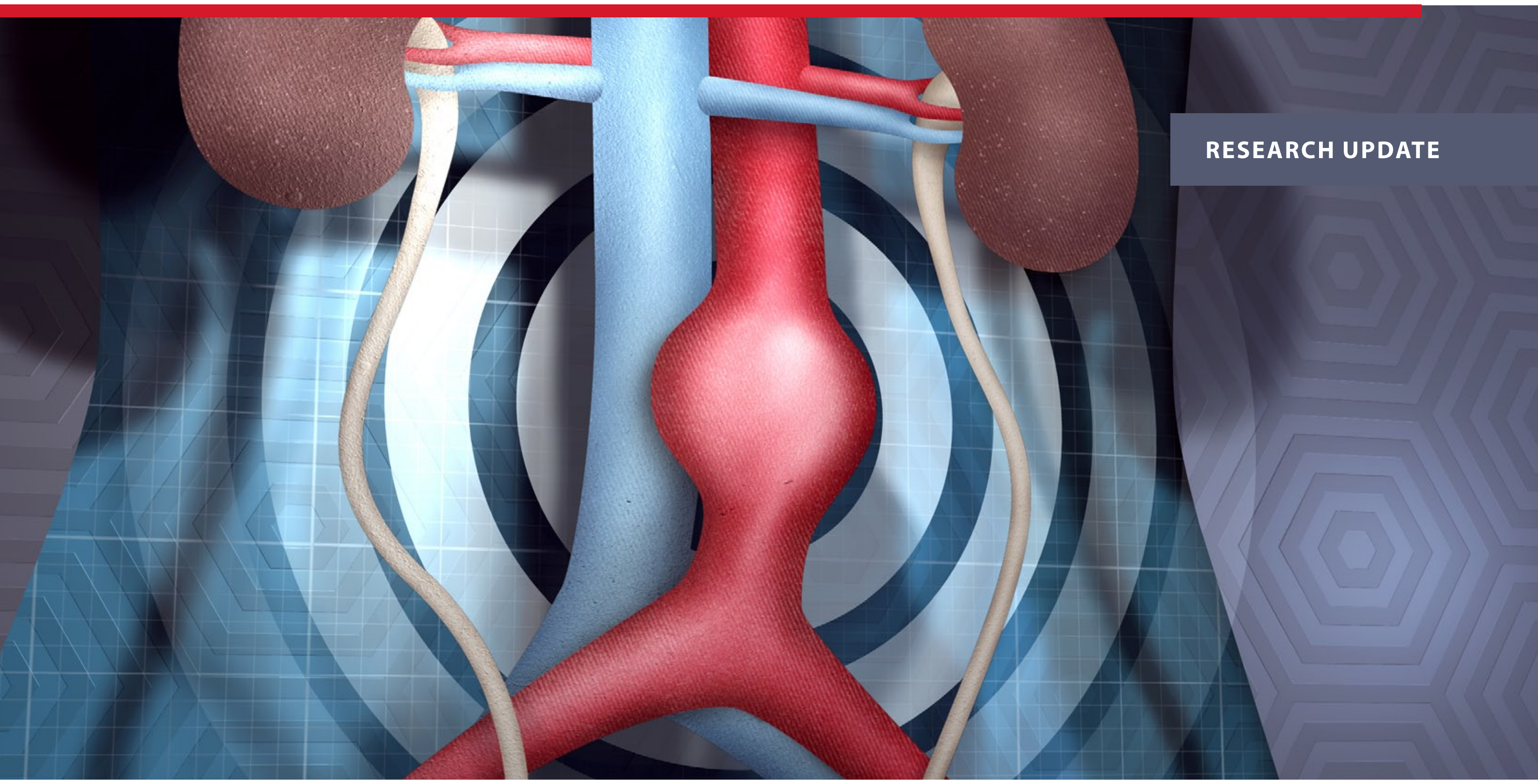

Targeted testing for abdominal aortic aneurysm

A recently published study from the University of Otago provides clarity as to which patients in general practice would benefit most from opportunistic investigation for abdominal aortic aneurysms (AAA).

Abdominal aortic aneurysms (AAA) are present in 5–10% of older men and 1–2% of older women[1, 2] and cause the death of five men and two women per 100,000 annually.[3] The rate of spontaneous AAA rupture increases with aneurysm size.[4, 5] One study found aneurysms 5.0–5.9 cm had an annual rupture risk of 9.4%; the risk increased to 32.5% for aneurysms of 7.0 cm or more.[4] Spontaneous AAA rupture is associated with a high mortality rate (80%), and emergency surgery following AAA rupture has a significantly higher mortality rate (30–65%) than elective AAA repair (3–10%).[5–7]

General practitioners can identify patients at risk of AAA. Early diagnosis allows patients to be offered surgery when the risk of spontaneous rupture outweighs the risk of surgery, usually when the AAA diameter is greater than 5.5 cm.[7] AAA may be detected by palpation in patients with low or normal body mass, but it is usually detected by abdominal ultrasound.[7]

Targeted testing for AAA typically focuses on males aged over 65 years. International studies and screening programmes targeting males of this age have been reported to reduce mortality due to AAA by approximately 40%.[7, 8] Such programmes raise concerns, however, regarding potential overtreatment and health system capacity.[6] Screening programmes have been criticised for excluding other at-risk groups, such as women, who constitute approximately 25% of those presenting with ruptured AAA.[1] In New Zealand, targeted testing of males aged over 65 years may disadvantage Māori, as they experience rupture at a younger age, Māori women are equally affected and Māori appear to experience worse outcomes from AAA than non-Māori.[6, 9, 10]

A testing programme for AAA

A recently published University of Otago study involving over 4000 men and women aged over 50 years from the Southern region tested participants for AAA using abdominal ultrasound.[1] This study compared the effectiveness of identifying patients for AAA investigation based on cardiovascular risk. Study groups comprised:[1]

- Patients attending the cardiology service for coronary angiography

- Patients with suspected peripheral arterial disease attending a vascular laboratory for investigations
- Patients assessed by their general practitioner as having a five-year cardiovascular risk assessment (CVDRA) score greater than 10%
- A comparison group of patients with no known cardiovascular disease or symptoms

Researchers found that the risk of AAA increased in proportion to cardiovascular burden in patients aged over 50 years.[1] The prevalence of AAA was 5.5% in the coronary angiography group, 4.4% in the peripheral arterial disease group, 3.2% among the CVDRA group, and 1% in the comparison group.[1] The prevalence of AAA was 6.1% in men, and 1.8% in women overall.[1] People with AAA in the CVDRA group were on average seven years younger than those with AAA in the other screening groups, despite each group having a similar average age (65–70 years).[1] Additional risk factors were those often associated with AAA, i.e. being male, a smoker and having a family history of AAA.[1] The study was not powered to detect ethnic differences in AAA prevalence, which is being addressed in a separate study conducted in the Waitemata DHB.

When considered in the context of a screening strategy for AAA, the most effective approach appears to be to test patients with the highest risk of cardiovascular disease. The study found that:[1]

- Testing only patients with angiographically proven coronary disease detected 91% of the AAAs found in the angiography cohort, but required only 68% of the ultrasound examinations, compared to testing all those who presented for angiography.
- Testing patients with a five-year CVDRA ≥ 15% identified 88% of the AAAs in that cohort, and required 61% of the ultrasound examinations, compared to testing every patient with CVDRA >10%.
- Testing only people with severe vascular disease was less effective, as this strategy identified only 33% of AAAs in that cohort.

Testing for AAA in primary care

Opportunistic investigation for AAA with abdominal ultrasound should be considered in people at increased risk. The patient risk profile can be based on the following factors:

- The risk of AAA is highest in those aged over 50 years with either known cardiovascular disease or CVDRA >10%.[1]
- AAA prevalence is higher in males, current and past smokers, those with a family history of AAA, and increases with age.[1]
- Māori have increased risk of AAA at a younger age and equal numbers of males and females are affected.[6, 9]

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