

Ultrasound Screening pilot for Abdominal Aortic Aneurysm in New Zealand Māori, a high risk ethnic sub-group.



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OBJECTIVE

Approximately one in 74 New Zealand men aged 65 and over dies of abdominal aortic aneurysm (AAA). Māori, the indigenous ethnic people of New Zealand, have overall poor health outcomes compared to other ethnic groups in New Zealand. They develop and die from abdominal aortic aneurysms (AAA) at an age 8 years less than New Zealand Europeans. AAA can in most cases be detected with an ultrasound examination of the abdomen, and if detected, it can be monitored or repaired before complications arise.

Several countries have developed population-based screening programmes, which in randomised controlled trials have demonstrated mortality benefits along with favourable cost-effectiveness ratios. Studies have shown that New Zealand Māori are at a significantly higher risk of dying from AAA than non-Māori. A screening programme for Māori therefore has the potential to identify AAA in a group at particularly high risk, reduce mortality in this group and contribute to a reduction in ethnic inequalities.

The aims of this pilot screening programme are to determine the prevalence rate of AAA in Māori men and women, to identify the most appropriate age range for screening Māori men and to generate data on the participation rate among Māori that could be achieved in a national or sub-national screening programme.

MATERIALS AND METHOD

A screening pilot was developed and individuals were invited to attend a screening session through a posted letter. Informed consent was required to participate in the programme. The local ethics committee and Māori Research Committee approved the project. Participants who had previously had AAA diagnosed, including those with prior AAA repair were excluded from the screening programme (determined from practice, hospital and imaging records). In some cases participating GPs could recommend exclusion for example because of other health concerns or because the patient would not be a candidate for repair (endovascular or open).

The age for this pilot was set at 55-74 for Māori men because there is evidence that Māori men die from AAA on average 8 years younger than European men. As females generally develop AAA at an older age than males, the eligible age range for Māori women in this pilot is from 60-74.

The examination was performed using a portable ultrasound machine and performed by an ultrasound technician, with training in excess of that used in the UK screening programme. Examinations were performed at the general practice/community location in the first instance, in the event of non-visualisation of the aorta at the initial screening examination; the patient was referred to the Radiology department at the regional hospital for scanning by a trained sonographer. A senior radiology trainee reviewed the images for quality assurance purposes.

Maximum anterior-posterior infra-renal aortic diameters measured with images in the longitudinal and transverse planes were recorded. Participants found to have an aortic diameter of 26 millimeters or more were referred to the Auckland Vascular Surgical Service.

RESULTS

4587 individuals were identified as being eligible for the screening pilot, 171 were excluded. The number of individuals screened was 3143, an overall participation rate of 71.2%. 1933 males and 1208 females were screened, participation rates of 69.3% and 74.2% respectively.

Aortic ectasia, an aortic diameter of 26-29mm was identified in a total of 113 participants (3.6%, 95% CI: 3.0 - 4.3); 99 males (5.1%, 95% CI: 4.2 - 6.2) and 14 females (1.2%, 95% CI: 0.67 - 1.95).

Small aneurysms, aortic diameters of 30 – 54mm in males and 30 – 49mm in females were identified in a total of 96 participants (3.1%, 95% CI: 2.5 – 3.7); 77 males (4.0%, 95% CI: 3.2 – 4.9) and 19 females (1.6%, 95% CI: 1.0 – 2.5).

Large aneurysms, aortic diameters of greater than 55mm in males and 50mm in females were identified in a total of 9 participants (0.3%, 95% CI: 0.1 – 0.5); 8 males (0.4%, 95% CI: 0.2 – 0.8) and 1 female (0.1%, 95% CI: 0.01 – 0.5).

Table 1. Aneurysm Prevalence

	Ectasia		Small AAA		Large AAA	
Total	113/3143	3.6% (3.0-4.3)	96/3143	3.1% (2.5-3.6)	9/3143	0.3% (0.1-0.6)
Male	99/1933	5.1% (4.2-6.2)	77/1933	4.0% (3.2-5.0)	8/1933	0.4% (0.2-0.8)
Female	14/1208	1.2% (0.7-1.9)	19/1208	1.6% (1.0-2.5)	1/1208	0.1% (0-0.5)

CONCLUSIONS

This screening pilot study in a high-risk population demonstrates high participation indicating acceptability, and is the largest conducted in New Zealand to date. Participation uptake rates are comparable to established AAA screening programs in other countries.

The programme identified a higher prevalence of AAA in both Māori men and women compared to other population groups which, in combination with other studies demonstrating higher mortality rates in this population, indicates a national AAA screening programme may be of particular benefit to Māori.

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