



Public Health
England

Protecting and improving the nation's health

NHS Abdominal Aortic Aneurysm Screening Programme National Research Day 2019

Newcastle

7 February



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Welcome and introduction

*Gerry Stansby, Research Lead, National AAA Screening
Programme*

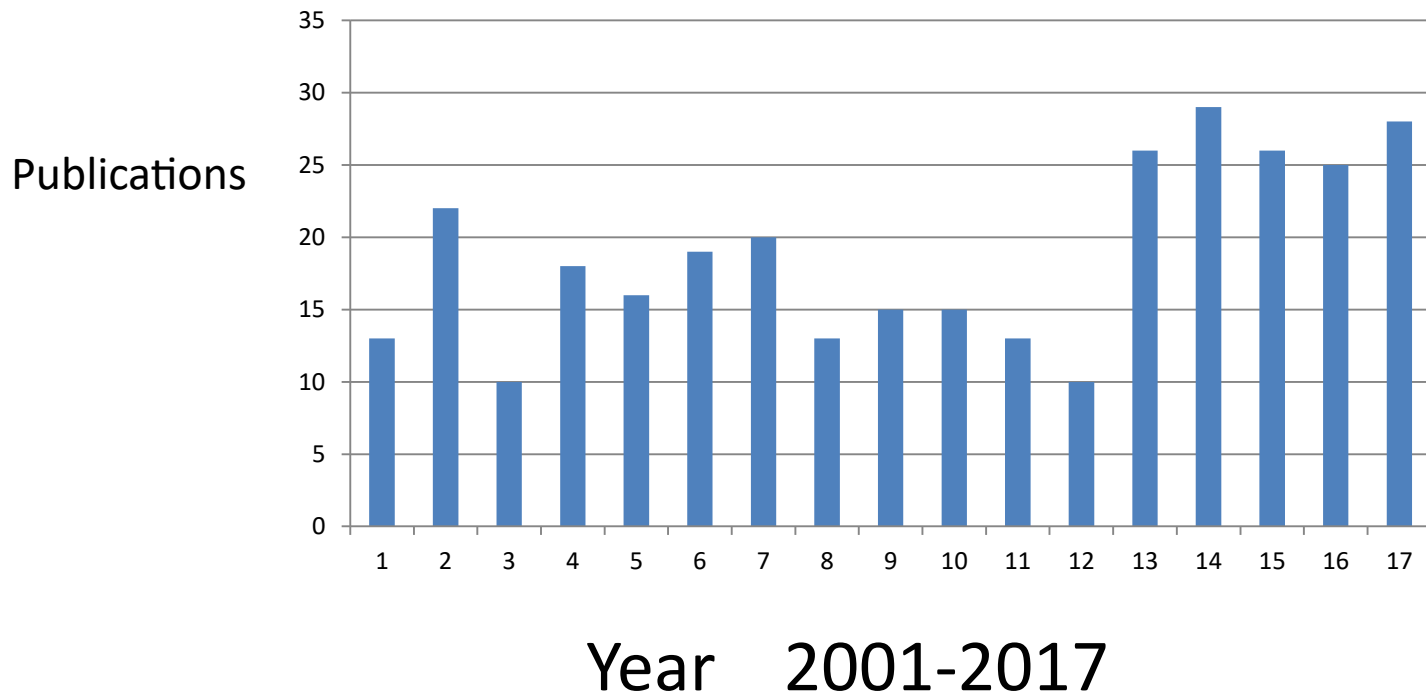
NAAASP research meeting.
Newcastle upon Tyne
7th February 2019.

WELCOME!

What is Research?

- Not just randomised trials! Although they are the gold standard for treatment effects.
 - Non-randomised studies/Diagnostic test accuracy studies
 - Qualitative research
 - Audits
 - Pilot studies
- No RCTs? What do we do then?
- What do we do if there is too much (conflicting) research!

AAA Screening – clinical trials Publications 2001-2017 (PubMed)

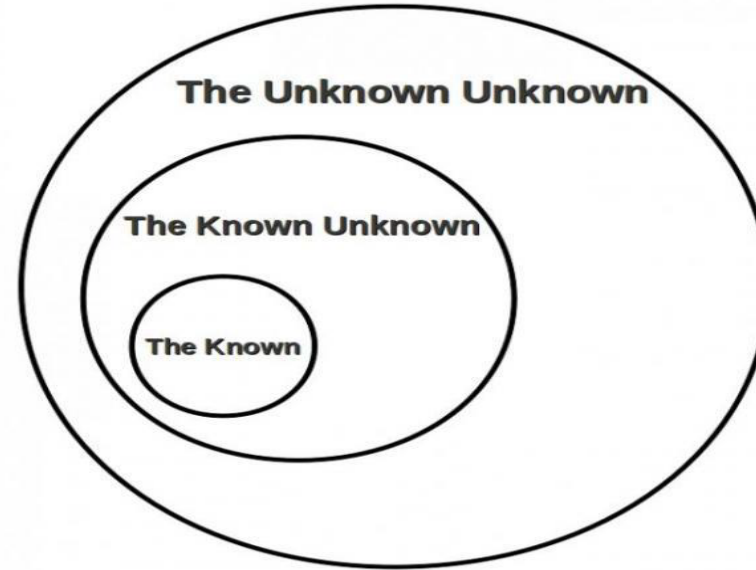


Solutions?

- New Collaborations/Multicentre trials
- Use existing data
 - NAAASP data
 - NHS data
- Modelling
 - Economic
 - Survival
- Non-randomised designs
 - Cohort studies/subgroup comparisons
 - Propensity score matching etc
- Qualitative research/QoL research
- Audits/Service improvement – done well

The unknown.

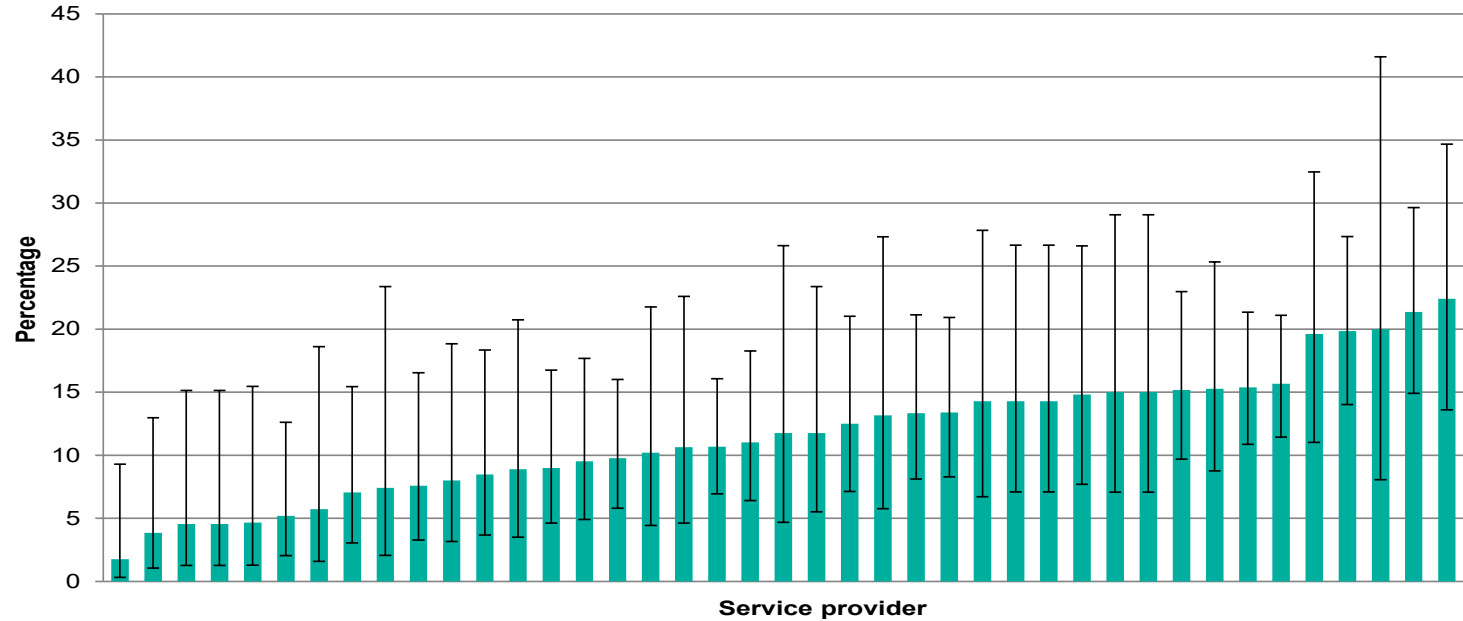
There are **known knowns**; there are things we know that we know. There are **known unknowns**; that is to say, there are things that we now know we don't know. But there are also **unknown unknowns** – there are things we do not know we don't know. (Donald Rumsfeld)



Generic “Screening” Research Challenges

- DNA rates and how to impact on them
- The test used – how to improve them/it
 - Diagnostically – more accurate
 - Functionally – easier to use/administer
- Logistics/Pathways/Service delivery
- Interaction with clinical services
 - Degree of control over treatment
 - Monitoring/contracting of treatment services
- Health economics/QoL
 - Cost effectiveness
 - Guidelines (NICE)

Variation: Turndown by provider



Why are there fewer RCT's in surgery?

- Once a surgical treatment is accepted testing against placebo is difficult - resistance exists to randomization in surgery vs non-surgical options.
- Surgeon's eagerness to introduce new techniques
- Surgeons use to making important decisions on limited information.
- How do you account for learning curves?
- Commercial pressures (mostly bad, occasionally good)
- Difficulties with recruitment, consent and randomization.
- Surgeons know best!

AAA research committee

- If it is research the AAA screening research committee needs to know and approve it.
 - Especially if patient data is involved
- If it is Audit or service improvement projects we also need to know – please.
- We are unlikely to say “no” unless there are major issues which go against SOPs or may be unethical.
- We may make suggestions how studies or evaluations could be improved.
- We may know of other studies which can provide pointers or help with study design etc
- We will respond quickly
- Dissemination of your work is essential -we can help

<https://www.hra.nhs.uk/>



Is my study research?

Welcome. The aim of this decision tool is to help you decide whether or not your study is research as defined by the UK Policy Framework for Health and Social Care Research.

It is based on the **Defining Research** table produced by the Research Ethics Service.

You will be presented with a short series of **YES** or **NO** questions. Take your time to consider the wording carefully. Once you have answered these questions the tool will let you know if your study is research.

To help you with terminology, a **GLOSSARY** button is available on every page. All links to individual glossary items or other websites appear in purple text and open in a new window.

Post Market Surveillance is NOT usually considered research. However, there are some circumstances where an NHS REC approval may be required. Return to the *Do I need NHS REC approval?* tool to determine if your post market surveillance requires NHS REC approval.

Follow this link to begin.

[About this tool](#) [Feedback](#) [Contact](#) [Glossary](#)



More evidence = better decisions





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National programme update

*Lisa Summers, Programme Manager, NHS AAA Screening
Programme, Public Health England*



Public Health
England



NAAASP National Update AAA National Research Day

Lisa Summers

National AAA Screening Programme Manager

7 February 2019

Headline figures

Headline figures	2009/10 to date	2018/19 Q3
Number men eligible for screening	2,191,659	293,920
Number of men offered screening	2,131,292	259,124
Number of men screened	1,667,984	183,839
Number of men with aorta ≥ 3.0 cm	19,928	1,759
Coverage (percentage)	76.1	62.5
Uptake (percentage)	78.3	70.9
Aneurysms detected (percentage)	1.19	0.96
Referred for surgery	5,118	657
Operated on	3,451	-
30 day post operative mortality (percentage)	0.52	-

KPIs 2018/19

Latest data published Q1 (April 2018 – June 2018)

AA2 (coverage of initial screen)

- Performance 23.2% (above acceptable threshold of 18%)

AA3 (coverage of annual surveillance screen)

- Performance 91.9% (above acceptable threshold 85%)

AA4 (coverage of quarterly surveillance screen)

- Performance 91.3% (above acceptable threshold 85%)

<https://www.gov.uk/government/collections/nhs-screening-programmes-national-data-reporting> under the '**Reports**' section

Standards, reporting & guidance

- Revision of pathway standards – implementation 1 April 2020
- Revision of data sets
- Data retention
- Advisory Group – patient representatives

IT & equipment

- SMaRT:-
 - Training for Co-ordinators/Admin
 - User Group
 - Version 9.6
- Equipment specification re-evaluation



Demographic feed

- NHAIS due to be decommissioned
- SPINE Demographics will be the sole authoritative source (for England & DMS) for identifying subjects who become newly eligible for AAA screening and for providing notifications of subsequent changes to their demographic/registration details
- AAA due for transfer March/April 2019
- Will receive all men registered AND resident in England as opposed to just registered in England
- Will receive men registered with the Defence Medical Services (DMS)
- Accessible Information Standard
- Business as usual
- Future – health & justice system



Guidance

Identifying inequalities

Published 24 May 2018

Contents

1. [Legislation](#)
2. [Data reports](#)
3. [Deprivation and ethnic group analysis tool](#)
4. [Evaluation](#)

Public Health England (PHE) aims to reduce health inequalities.

This guidance is to help local AAA screening providers, commissioners and other public health specialists identify interventions that can reduce inequalities by improving access to services and outcomes.

Some groups of men are less likely to attend AAA screening and this may increase health inequalities. [Social deprivation](#) is associated with both poorer attendance at screening and follow-up, and having an AAA.

1. Legislation

The [Equality Act 2010](#) states that people should not be discriminated against based on their personal characteristics.

Public bodies and others carrying out public functions have a duty to consider the needs of all individuals. We need to collect information about our service users in order to provide evidence that we are doing this. This is why local providers should [collect information about characteristics such as ethnic group](#).



Guidance

Reducing inequalities

Published 24 May 2018

Contents

[Evidence-based recommendations](#)

[Lowering barriers to attendance at initial screening appointments](#)

[Engaging with public and professionals](#)

[Prior notification list and DNA analysis](#)

[Screening men with learning disabilities](#)

[Screening in prisons and secure mental health facilities](#)

Evidence-based recommendations

Researchers in Scotland in November 2017 carried out a systematic review of factors influencing attendance at abdominal aortic aneurysm (AAA) screening and interventions to reduce inequalities.

They made the following recommendations.

1. Once men have been invited for screening it may be useful to provide extra support and personal reminders to those less likely to attend.
2. Services should give increased consideration to travel time to clinics, particularly for men less likely to attend, and public transport use.
3. It may help to work alongside colleagues who share an interest in improving men's engagement with healthcare. For example, services may be able to use times when men attend other health or social care services, such as GP or acute hospital services, to discuss screening.
4. Interventions to reduce inequalities implemented locally should be evaluated and the results widely disseminated, so effective interventions can be implemented elsewhere and ineffective ones can be stopped.



Guidance

Submitting examples of best practice

Published 24 May 2018

Contents

[Purpose](#)[Before submission](#)[Writing your case study](#)[Submitting your case for shared learning](#)

Purpose

This guidance explains the national process for providers, commissioners and other stakeholders to share learning and good practice in reducing barriers to attendance for men for AAA screening.

The PHE screening quality assurance service (SQAS) and 4 nations AAA screening group review all submitted case studies before approving for publication on the [PHE screening blog](#).

In addition to case studies that have reduced barriers and improved uptake, we also welcome case studies that have not been successful as these may also help providers decide what actions to take.

Before submission

Before you submit a case for shared learning you should make sure:

- it does not conflict with the [standard operating procedures for AAA screening](#)

What next?

- Four nations ownership
- Toolkit evolution
- Submission process
- How will new inequalities initiatives be announced?
- Audit and service evaluation

Training and education

- Reaccreditation
- Health screener diploma:-
 - 17 screeners have successfully completed
 - 56 currently undertaking
- **Assessor and learner support resource:-**
 - Working with National Skills Academy on video resource
 - Electronic resource with information to support the mandatory units of the diploma
 - Half day update sessions in London, Birmingham and Manchester
- Review of e-learning modules for CSTs and screening technicians
 - Due to go live at the end of February 2019

Diary dates

- National Networking & Information Sharing day – 24 June 2019, Birmingham

Thank You!



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What don't we know? Lessons learnt and research that is still needed in AAA screening

Jonathan Earnshaw, Past Clinical Lead, NHS AAA Screening Programme, Public Health England



*UK National
Screening Committee*



Screening Programmes

Abdominal Aortic Aneurysm

Lessons learned, and research that is still needed in AAA screening

NAAASP Research Day 7/2/19

Jonathan J Earnshaw
Retired



Exhausted

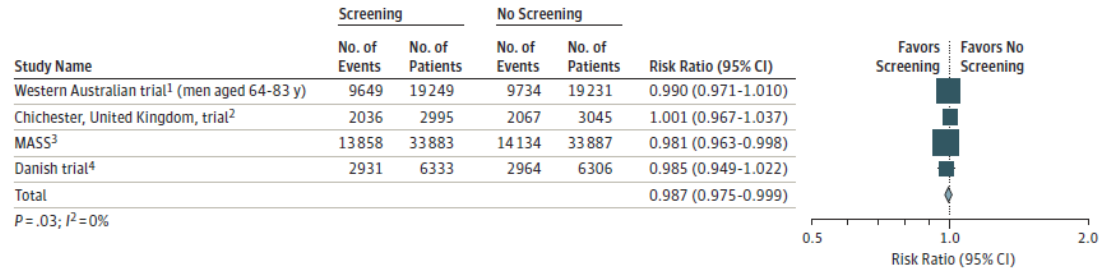


RCTs – the final word.....

Research Original Investigation

Western Australian Trial of Screening for Abdominal Aortic Aneurysms

Figure. Random-Effects Model for Meta-analysis of All-Cause Mortality at Longest Reported Follow-up in the 4 Trials of Abdominal Aneurysm Screening



MASS indicates Multicenter Aneurysm Screening Study.

Invited Commentary

The Last (Randomized) Word on Screening for Abdominal Aortic Aneurysms

Frank A. Lederle, MD

Does screening work in Sweden?

Swedish Nationwide AAA Screening Program

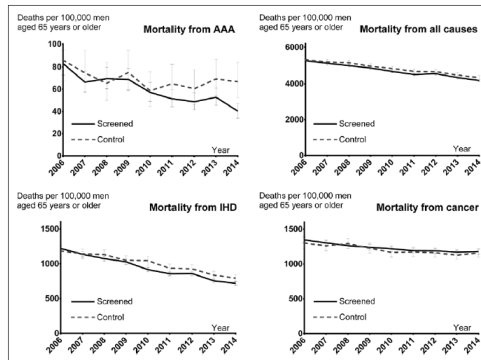


Figure 3. Time trends in mortality rates in the screened cohort (solid black line), consisting of counties that at the end of the study had screened ≥ 6 years (mean, 7.1 years), and the control cohort (interrupted gray line), consisting of counties that at the end of the study had screened for < 4 years (mean, 1.5 years). The y axis displays specific mortality per 100 000 men aged ≥ 65 years. The x axis displays calendar year in study. Error bars indicate 95% confidence intervals of mortality rate. AAA indicates abdominal aortic aneurysm; and IHD, ischemic heart disease.

Benefits and harms of screening men for abdominal aortic aneurysm in Sweden: a registry-based cohort study



Mina Johansson, Per Henrik Zän, Viktor Sörnäs, Karsten Juhl-Jørgensen, Bertil Marklund, John Bredesen

Summary

Background Large reductions in the incidence of abdominal aortic aneurysm (AAA) and AAA-related mortality mean that results from randomised trials of screening for the disorder might be out-dated. The aim of this study was to estimate the effect of AAA screening in Sweden on disease-specific mortality, incidence, and surgery.

Methods Individual data on the incidence of AAA, AAA mortality, and surgery for AAA in a cohort of men aged 65 years who were invited to screening between 2006 and 2009, were compared with data from an age-matched contemporaneous cohort of men who were not invited for AAA screening. We also analysed national data for all men aged 65–99 years between Jan 1, 1987, and Dec 31, 2015, to explore background trends. Adjustment for confounding was done by weighting the analyses with a propensity score obtained from a logistic regression model on cohort year, marital status, educational level, income, and whether the patient already had an AAA diagnosis at baseline. Adjustment for differential attrition was also done by weighting the analyses with the inverse probability of still being in the cohort 6 years after screening. Generalised estimating equations were used to adjust the variance for repeated measurement and in response to the weighting.

Findings AAA mortality in Swedish men has decreased from 36 to ten deaths per 100 000 men aged 65–74 years between the early 2000s and 2015. Mortality decreased at similar rates in all Swedish counties, irrespective of whether AAA screening was offered. After 6 years with screening, we found a non-significant reduction in AAA mortality associated with screening (adjusted odds ratio [aOR] 0.76, 95% CI 0.38–1.51), which means that two men (95% CI –3 to 7) avoid death from AAA for every 10 000 men offered screening. Screening was associated with increased odds of AAA diagnosis (aOR 1.52, 95% CI 1.16–1.99; $p < 0.001$) and an increased risk of elective surgery (aOR 1.59, 95% CI 1.20–2.10; $p < 0.001$), such that for every 10 000 men offered screening, 49 men (95% CI 25–73) were likely to be overdiagnosed, 19 of whom (95% CI 1–37) had avoidable surgery that increased their risk of mortality and morbidity.

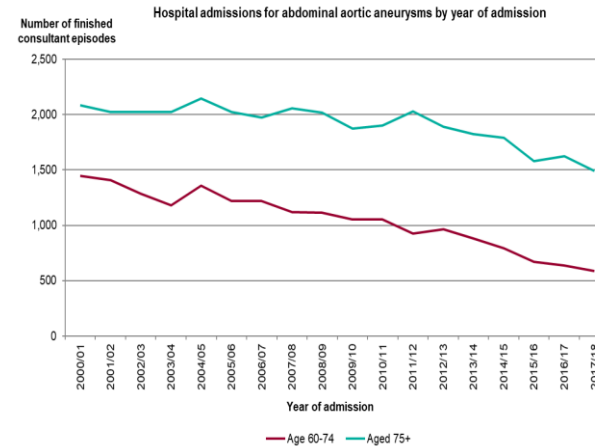
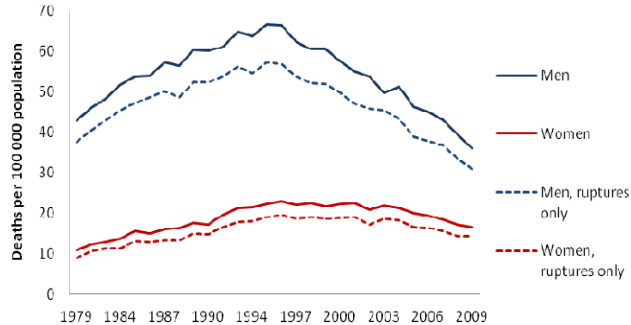
Interpretation AAA screening in Sweden did not contribute substantially to the large observed reductions in AAA mortality. The reductions were mostly caused by other factors, probably reduced smoking. The small benefit and substantially less favourable benefits-to-harms balance call the continued justification of the intervention into question.

Funding Research Unit and Section for General Practice, FoU-centrum Fyrbodal, Sweden, and the region of Västra Götaland, Sweden.

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Lancet 2018, 391, 1443–47
 See Comment page 1382
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 Department of Clinical and Primary Health Research Unit, Eastern Region, Lund, Denmark
 (J Bredesen)

Is AAA screening working in England?



Original article

Cost-effectiveness of the National Health Service abdominal aortic aneurysm screening programme in England

M. J. Glover¹, L. G. Kim², M. J. Sweeting³, S. G. Thompson³ and M. J. Buxton¹

¹Health Economics Research Group, Brunel University, and ²Department of Medical Statistics, Faculty of Epidemiology and Population Health, London School of Hygiene and Tropical Medicine, London, and ³Department of Public Health and Primary Care, University of Cambridge, Cambridge, UK
Correspondence to: Mr M. J. Glover, Health Economics Research Group, Brunel University, Uxbridge UB8 3PH, UK (e-mail: Matthew.Glover@brunel.ac.uk)

Background: Implementation of the National Health Service abdominal aortic aneurysm (AAA) screening programme (NAAASP) for men aged 65 years began in England in 2009. An important element of the evidence base supporting its introduction was the economic modelling of the long-term cost-effectiveness of screening, which was based mainly on 4-year follow-up data from the Multicentre Aneurysm Screening Study (MASS) randomized trial. Concern has been expressed about whether this conclusion of cost-effectiveness still holds, given the early performance parameters, particularly the lower prevalence of AAA observed in NAAASP.

Methods: The existing published model was adjusted and updated to reflect the current best evidence.

Screening women

Analysis of clinical benefit, harms, and cost-effectiveness of screening women for abdominal aortic aneurysm



Michael J Saewyc, Katya L Masconi, Edmund Jones, Pinar Ullug, Matthew J Glover, Jonathan A Michalek, Matthew Brown, Janet T Powell, Simon G Thompson



Summary

Background: A third of deaths in the UK from ruptured abdominal aortic aneurysm (AAA) are in women. In men, national screening programmes reduce deaths from AAA and are cost-effective. The benefits, harms, and cost-effectiveness in offering a similar programme to women have not been formally assessed, and this was the aim of this study.

Methods: We developed a decision model to assess predefined outcomes of death caused by AAA, life years, quality-adjusted life years, costs, and the incremental cost-effectiveness ratio for a population of women invited to AAA screening versus a population who were not invited to screening. A discrete event simulation model was set up for AAA screening, surveillance, and intervention. Relevant women-specific parameters were obtained from sources including systematic literature reviews, national registry or administrative databases, major AAA surgery trials, and UK National Health Service reference costs.

Findings: AAA screening for women, as currently offered to UK men (at age 65 years, with an AAA diagnosis at an aortic diameter of ≥ 3.0 cm, and elective repair considered at ≥ 5.5 cm) gave, over 30 years, an estimated incremental cost-effectiveness ratio of £30 000 (95% CI 12 000–87 000) per quality-adjusted life year gained, with 3900 invitations to screening required to prevent one AAA-related death and an overdiagnosis rate of 33%. A modified option for women (screening at age 70 years, diagnosis at 2.5 cm and repair at 5.0 cm) was estimated to have an incremental cost-effectiveness ratio of £23 000 (95% CI 9000–71 000) per quality-adjusted life year and 1800 invitations to screening required to prevent one AAA death, but an overdiagnosis rate of 55%. There was considerable uncertainty in the cost-effectiveness ratio, largely driven by uncertainty about AAA prevalence, the distribution of aortic sizes for women at different ages, and the effect of screening on quality of life.

Interpretation: By UK standards, an AAA screening programme for women, designed to be similar to that used to screen men, is unlikely to be cost-effective. Further research on the aortic diameter distribution in women and potential quality of life decrements associated with screening are needed to assess the full benefits and harms of modified options.

Lancet 2018; 391: 402–09
Published Online
July 26, 2018
[http://dx.doi.org/10.1016/S0140-6736\(18\)31222-4](http://dx.doi.org/10.1016/S0140-6736(18)31222-4)

See Comment page 454

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Targeted screening?

BJS11047

Original article

Targeted screening for abdominal aortic aneurysm in siblings is cost-effective

R. Hultgren^{1,2}, A. Linné³ and S. Svensjö^{4,5,6} 

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Background: Population screening for abdominal aortic aneurysm (AAA) in 65-year-old men has been shown to be cost-effective. A risk group with higher prevalence is siblings of parents with an AAA. This health economic model-based study evaluated the cost-effectiveness of targeted AAA screening of siblings.

Methods: A Markov model validated against other screening programmes was used. Two methods of identifying siblings were analysed: direct questioning of patients with an AAA (method A), and a second employing a national multigeneration register (method B). The prevalence was based on observed ultrasound data on AAAs in siblings. Additional parameters were extracted from RCTs, vascular registers, literature and ongoing screening. The outcome was cost-effectiveness, probability of cost-effectiveness at different willingness-to-pay (WTP) thresholds, reduction in AAA death, quality-adjusted life-years (QALYs) gained and total costs on a national scale.

Results: Methods A and B were estimated to reduce mortality from AAA, at incremental cost-effectiveness ratios of €7800 (95 per cent c.i. 4627 to 12 982) and €7666 (5000 to 13 373) per QALY respectively. The probability of cost-effectiveness was 99 per cent at a WTP of €23 000. The absolute risk reduction in AAA deaths was five per 1000 invited. QALYs gained were 27 per 1000 invited. In a population of ten million, methods A and B were estimated to prevent 12 and 17 AAA deaths, among 2418 and 3572 siblings identified annually, at total costs of €499 500 and €728 700 respectively.

Conclusion: The analysis indicates that aneurysm-related mortality could be decreased cost-effectively by applying a targeted screening method for siblings of patients with an AAA.

Paper accepted 10 October 2018

Published online in Wiley Online Library (www.bjso.co.uk). DOI: 10.1002/bjs.11047

Making every contact count....

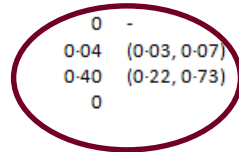
- Smoking cessation
- Vascular health checks
- Mentioning other screening programmes
 - bowel cancer
 - prostate cancer
 - lung cancer

Research in surveillance

- 15,000 men (and others not in NAAASP)
- All arteriopathies
- Invested
- Monitored regularly

AAA rupture in surveillance

	Number of men	Ruptures (N)	Follow-up (person-years)	Incidence rate per 100 person-years (95% CI)
Overall	18,652	31	50,095	0.06 (0.04, 0.09)
Routinely invited	15,527	25	42,220	0.06 (0.04, 0.09)
Self-referred	3,125	6	7,876	0.08 (0.03, 0.17)
Initial aortic measurement				
Grouping 1				
3-0-4-4cm	16,430	20	46,576	0.04 (0.03, 0.07)
4-5-5-4cm	2,222	11	3,519	0.31 (0.17, 0.56)
Grouping 2				
3-0-4-9cm	17,883	28	49,349	0.06 (0.04, 0.08)
5-0-5-4cm	769	3	746	0.40 (0.13, 1.25)
Last known aortic measurement				
Grouping 1				
<3-0cm	-	0	1,713	0 -
3-0-4-4cm	-	13	41,788	0.03 (0.02, 0.05)
4-5-5-4cm	-	18	6,532	0.28 (0.17, 0.44)
5-5cm+	-	0	32	0 -
Grouping 2				
<3-0cm	-	0	1,713	0 -
3-0-4-9cm	-	20	45,594	0.04 (0.03, 0.07)
5-0-5-4cm	-	11	2,726	0.40 (0.22, 0.73)
5-5cm+	-	0	32	0



Men safe in surveillance in NAAASP
 No need to change referral threshold

Deaths in surveillance

	Number of men	Deaths (N)	Follow-up (person-years)	Mortality rate per 100 person-years (95% CI)
Overall	18,652	981	50,103	1.96 (1.84-2.08)
Routinely invited	15,527	802	42,226	1.90 (1.77-2.04)
Self-referred	3,125	179	7,877	2.27 (1.96-2.63)
Initial AAA measurement				
Grouping 1				
3-0-4-4cm	16,430	912	46,581	1.96 (1.83-2.09)
4-5-5-4cm	2,222	69	3,522	1.96 (1.55-2.48)
Grouping 2				
3-0-4-9cm	17,883	966	49,354	1.96 (1.84-2.08)
5-0-5-4cm	769	15	749	2.00 (1.21-3.32)
Last known AAA measurement				
Grouping 1				
<3-0cm		19	1,713	1.11 (0.71-1.74)
3-0-4-4cm		826	41,790	1.98 (1.85-2.12)
4-5-5-4cm		134	6,535	2.05 (1.73-2.43)
5-5cm+		2	33	6.02 (1.51-24.08)
Grouping 2				
<3-0cm		19	1,713	1.11 (0.71-1.74)
3-0-4-9cm		896	45,597	1.97 (1.84-2.10)
5-0-5-4cm		64	2,729	2.35 (1.84-3.00)
5-5cm+		2	33	6.02 (1.51-24.08)

Mortality around 2%/annum

Causes of death in surveillance

AAA 3%

Cancer 31%

Vascular or cardiac 26%

Other (non cancer, non cardiac) 29%

Unknown 10%

Should referral threshold be changed?

Health

'Concern' as study highlights aneurysm death rate

By James Gallagher
Health and science reporter, BBC News website

© 24 November 2016 | Health

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The death rate from abdominal aortic aneurysms is more than three times higher in England than in the US, analysis of official data shows.

The weakening and swelling of the main blood vessel from the heart is normally fatal if it bursts.



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ORIGINAL ARTICLE

Thresholds for Abdominal Aortic Aneurysm Repair in England and the United States

Alan Karthikesalingam, Ph.D., M.R.C.S., Alberto Vidal-Diez, Ph.D., Peter J. Holt, Ph.D., F.R.C.S., Ian M. Loftus, M.D. (Res.), F.R.C.S., Marc L. Schermerhorn, M.D., Peter A. Soden, M.D., Bruce E. Landon, M.D., and Matthew M. Thompson, M.D. (Res.), F.R.C.S.

N Engl J Med 2016; 375:2051-2059 | November 24, 2016 | DOI: 10.1056/NEJMoa1600931

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BACKGROUND

Thresholds for repair of abdominal aortic aneurysms vary

MEDIA IN THIS ARTICLE
FIGURE 1

Access to

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Why

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- 20 FREE CME credits
- 50 FREE offprints (1812-198)

....study does not conclusively prove that the lower operation rate in England is the only cause of the higher number of aneurysm deaths.

Reducing AAA growth

- Medication: metformin
- Risk factor management (smoking)

Discharge from surveillance

- Combination of age and diameter
 - 83 years old 3.9cm
 - 71 years old 3.2cm
 - 75 years old 4.7cm
- Previous scan history
- Artificial intelligence

Nursing workshop: proposal

Nurse assessments

(i) 'fit for open repair'

(ii) cardiovascular risk reduction

All

Within 3 months of diagnosis (face to face)

Three months later (telephone)

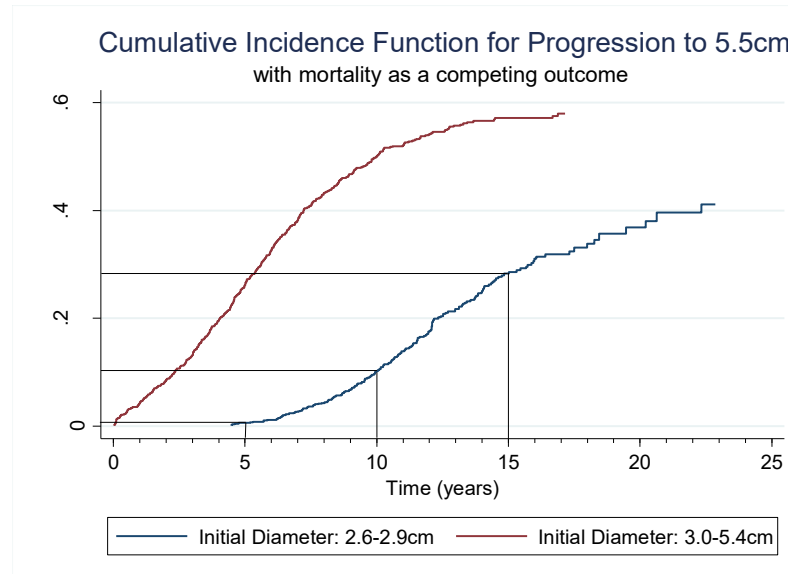
Men with small AAA

Repeat above at intervals (? Every 2/4/6 years)

Men with medium AAA

Repeat annually + prehabilitation

Subaneurysmal aorta at age 65

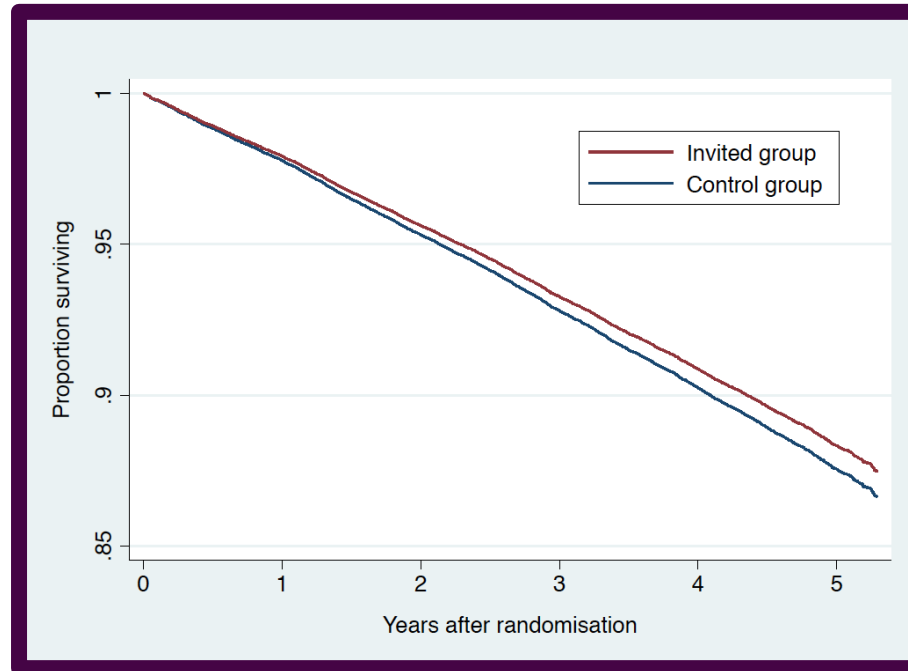


Men with subaneurysmal aorta at age 65: the case for surveillance

- Systematic review: case not yet made
- Need further information:
 - effect of prolonged surveillance on QoL
 - operation rate and outcomes

Ongoing project to collect QoL and outcome data for modelling study of cost effectiveness

Extended vascular screening: VIVA trial 2017



Extended vascular screening

- VIVA trial (2017): AAA screening, blood pressure, ABPI and cholesterol. Men aged 65-74. **7% reduction in mortality at 5 years**
- UK: AAA screening plus vascular health checks
- DANCAVAS (reported at ESVS): CT screening whole aorta, ECG (for AF), ABPI, bloods. Men aged 65-74. 30% have an abnormality - results 2021

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Visualization of asymptomatic atherosclerotic disease for optimum cardiovascular prevention (VIPVIZA): a pragmatic, open-label, randomised controlled trial

Prof Ulf Näslund, PhD · Prof Nawi Ng, PhD · Anna Lundgren, MD · Eva Fhärm, PhD · Christer Grönlund, PhD · Helene Johansson, PhD · et al. [Show all authors](#)

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Research in AAA screening: top tips

- Subaneurysmal aorta: QoL assessment and modelling
- Personalised surveillance intervals
- Discharge from surveillance
- Metformin to reduce AAA growth
- Is screening working?