Appendix D – Clinical evidence tables

Full citation	Barba A, Vega de Ceniga M, Estallo L, et al. (2013) Prevalence of abdominal aortic aneurysm is still high in certain areas of southern Europe. Annals of vascular surgery 27(8), 1068-73
Study details	Study design: cross-sectional study Location(s): Spain Aim of the study: to report the results of a systematic AAA screening programme in 65-year old men in a defined rural area in northern Spain Study dates: January 2008 to December 2009 Sources of funding: the study was supported by research grants from the Spanish Society of Angiology and Vascular Surgery Foundation and the Research Unit from the Galdakao-Usansolo Hospital
Participants	Sample size: 781 men Inclusion criteria: 65-year old men (born in 1943) who responded to an invitation to participate were included Exclusion criteria: not reported Baseline characteristics: • Mean age: not reported • Sex: 100% male • Diabetes: 52.1% • Hypertension: 25.7% • Dyslipidaemia: 76.9%
Methods	Data collection: Ultrasound imaging was used to establish the presence of AAA (defined as an infrarenal aortic diameter of 3 cm or larger). To ascertain the presence of risk factors investigators assessed participants' medical records, performed physical examinations and obtained blood samples after a minimum of 8 hours of overnight fasting. Hypertension was defined as systolic blood pressure greater than 140 mmHg or diastolic pressure less than 90 mm Hg measured, or the participant was already taking hypotensive medication. A patient was considered diabetic if they were receiving medication or if investigators found basal glycaemia greater than 120 mg/dL or haemoglobin A1c higher than 6.5%. Hyperlipidaemia was defined as the participant receiving treatment (a supervised diet or lipid lowering medication) or if they had total cholesterol levels greater than 200 mg/dL, triglycerides greater than 150 mg/dL or low-density lipoprotein cholesterol greater than 130 mg/dL. Cardiac disease included coronary heart disease, vascular disease, cardiomyopathy, and arrhythmia. Analysis: multivariate logistic regression. It is unclear what factors were adjusted for in the analysis.
Outcomes	Risk factors: smoking status, diabetes, hypertension, family history of AAA, peripheral artery disease, coronary insufficiency, and cerebrovascular disease

Full citation	**Barba A, Vega de Ceniga M, Estallo L, et al. (2013) Prevalence of abdominal aortic aneurysm is still high in certain areas of southern Europe. Annals of vascular surgery 27(8), 1068-73**
Study Appraisal using the Joanna Briggs Institute checklist	1. Were the criteria for inclusion in the sample clearly defined? Yes 2. Were the study subjects and the setting described in detail? Yes 3. Was the exposure measured in a valid and reliable way? Yes 4. Were objective, standard criteria used for measurement of the condition? Yes 5. Were confounding factors identified? Unclear 6. Were strategies to deal with confounding factors stated? Unclear 7. Were the outcomes measured in a valid and reliable way? Yes 8. Was appropriate statistical analysis used? No – stepwise regression was not performed. Instead, only variables with p-values <0.2 in multivariate analyses were explored in the multivariate logistic regression model. Overall risk of bias: moderate Directness: directly applicable

Full citation	**Berger J S, Hochman J, Lobach I, et al. (2013) Modifiable risk factor burden and the prevalence of peripheral artery disease in different vascular territories. Journal of vascular surgery 58(3), 673-81.e1**
Study details	Study design: cross-sectional study Location(s): USA Aim of the study: to investigate the association of modifiable risk factors with peripheral vascular disease, coronary artery stenosis and AAA among 3.3 million people enrolled in a population screening programme Study dates: 2004 to 2008 Sources of funding: the study was partially funded by the an American Heart Association Fellow to Faculty Award and a Doris Duke Clinical Scientist Development Award
Participants	Sample size: 3,319,993 people; Inclusion criteria: self-referred patients who paid for vascular screening tests. No further details were provided. Exclusion criteria: patients with records that did not report abdominal aortic ultrasound results and patients with missing data were excluded. When multiple screening was performed on the same individual only the first record with complete information was included. Baseline characteristics: • Mean age: 64.1 years • Sex: 62.5% female • Diabetes: 10.8% • Hypertension: 47.0%

Full citation	Berger J S, Hochman J, Lobach I, et al. (2013) Modifiable risk factor burden and the prevalence of peripheral artery disease in different vascular territories. Journal of vascular surgery 58(3), 673-81.e1
	• Hyperlipidaemia: 53.3% • Family history of cardiovascular disease: 23.0%
Methods	Data collection: Ultrasound imaging was used to establish the presence of AAA (defined as an infrarenal aortic diameter of 3 cm or larger). Participants were asked to complete a questionnaire self-administered questionnaire in order to ascertain the presence of risk factors. Hypertension was defined as systolic blood pressure of 140 mm Hg or greater in upper extremity, prior physician diagnosis, or medication use. Hypercholesterolemia was defined as the participant reporting that they were diagnosed or using lipid lowering medication. Diabetes was defined as self-reported physician diagnosis or the use of diabetes medication. Current smokers were defined as people who had smoked 100 cigarettes during their lifetime and were still currently smoking. Former smokers were considered individuals who had smoked 100 cigarettes during their lifetime and were not currently smoking. Analysis: multivariate logistic regression adjusting for age, sex, ethnicity, body mass index and a family history of cardiovascular disease
Outcomes	Risk factors: smoking status, hypertension, hyperlipidaemia and diabetes. Investigators also assessed a sedentary lifestyle as a risk factor; however, this factor is not listed for inclusion in the review protocol.
Study Appraisal using the Joanna Briggs Institute checklist	1. Were the criteria for inclusion in the sample clearly defined? Yes 2. Were the study subjects and the setting described in detail? Yes 3. Was the exposure measured in a valid and reliable way? No – the presence of risk factors was ascertained by participants completing a self-administered questionnaire. 4. Were objective, standard criteria used for measurement of the condition? Yes 5. Were confounding factors identified? Yes 6. Were strategies to deal with confounding factors stated? Yes 7. Were the outcomes measured in a valid and reliable way? Yes 8. Was appropriate statistical analysis used? Unclear – Investigators did not report whether a stepwise approach was used to perform the multivariate logistic regression. Overall risk of bias: moderate Directness: directly applicable

Full citation	Bonamigo TP, and Siqueira I (2003) Screening for abdominal aortic aneurysms. Revista do Hospital das Clinicas 58(2), 63-8
Study details	Study design: cross-sectional study Location(s): Brazil Aim of the study: to assess the prevalence of AAA in southern Brazil and define risk factors associated with high prevalence of the condition Study dates: 1987 to 1993 Sources of funding: not reported
Participants	Sample size: 768 men Inclusion criteria: patients attending cardiology clinics at participating hospitals were included. All participants were male and older than 54 years of age. Exclusion criteria: Women and men younger than 54 years old were excluded Baseline characteristics: • Mean age: not reported • Sex: 100% male • Comorbidities: not reported
Methods	Data collection: Ultrasound imaging was used to establish the presence of AAA. An AAA was defined as an infrarenal aortic diameter of 3 cm or larger, or if the infrarenal aortic diameter was more than 0.5 cm greater than the supra-renal aortic diameter. The presence of risk factors was determined by examination of medical records, medical interview and physical examination. All interviews were performed by the same clinician. Hypertension and ischemic heart disease were defined as proven history of these conditions or use of drugs to treat the conditions. Analysis: multivariate logistic regression. It is unclear what factors were adjusted for in the analysis
Outcomes	Risk factors: age, smoking status, diabetes, hypertension, myocardial disease, peripheral artery disease
Study Appraisal using the Joanna Briggs Institute checklist	1. Were the criteria for inclusion in the sample clearly defined? Yes 2. Were the study subjects and the setting described in detail? Yes 3. Was the exposure measured in a valid and reliable way? Yes 4. Were objective, standard criteria used for measurement of the condition? Yes 5. Were confounding factors identified? Unclear 6. Were strategies to deal with confounding factors stated? Unclear 7. Were the outcomes measured in a valid and reliable way? Yes 8. Was appropriate statistical analysis used? Unclear – Investigators did not report whether a stepwise approach was used to perform the multivariate logistic regression. Overall risk of bias: low Directness: directly applicable

Full citation	**Chun KC, Teng KY, Chavez LA, et al. (2014) Risk factors associated with the diagnosis of abdominal aortic aneurysm in patients screened at a regional Veterans Affairs health care system. Annals of vascular surgery 28(1), 87-92**
Study details	Study design: cross-sectional study Location(s): USA Aim of the study: to evaluate risk factors associated with AAA in people undergoing AAA screening Study dates: January 2007 to December 2009 Sources of funding: not reported
Participants	Sample size: 6,142; Inclusion criteria: individuals who underwent AAA screening in a regional (Californian) screening programme Exclusion criteria: people with ultrasound measurements that were deemed inconclusive or those who had incomplete risk factor data were excluded Baseline characteristics: • >75 years: 29.7% • Sex: 99.6% male • Hypertension: 68.8% • Diabetes: 26.7% • Coronary artery disease: 29.6% • COPD: 12.5% • Peripheral Vascular disease: 10%
Methods	Data collection: Ultrasound imaging was used to establish the presence of AAA (defined as an infrarenal aortic diameter of 3 cm or larger). The presence of risk factors was determined by assessment of participants' electronic medical records. Analysis: multivariate logistic regression. It is unclear what factors were adjusted for in the analysis.
Outcomes	Risk factors: age, smoking status, myocardial infarction, hypercholesterolemia, hypertension, diabetes, coronary artery disease, COPD, statin use, peripheral vascular disease. Investigators also assessed estimated glomerular filtration rate thresholds as risk factors; however, these are not listed for inclusion in the review protocol.
Study Appraisal using the Joanna Briggs	1. Were the criteria for inclusion in the sample clearly defined? No – it was unclear what people were eligible for screening and subsequent inclusion in this study 2. Were the study subjects and the setting described in detail? No 3. Was the exposure measured in a valid and reliable way? Yes 4. Were objective, standard criteria used for measurement of the condition? Yes 5. Were confounding factors identified? Unclear 6. Were strategies to deal with confounding factors stated? Unclear

Full citation	**Chun KC, Teng KY, Chavez LA, et al. (2014) Risk factors associated with the diagnosis of abdominal aortic aneurysm in patients screened at a regional Veterans Affairs health care system. Annals of vascular surgery 28(1), 87-92**
Institute checklist	7. Were the outcomes measured in a valid and reliable way? Yes 8. Was appropriate statistical analysis used? Unclear – Investigators did not report whether a stepwise approach was used to perform the multivariate logistic regression. Overall risk of bias: moderate Directness: directly applicable

Full citation	**Corrado Giovanni, Durante Alessandro, Genchi Vincenzo, Trabattoni Loris, Beretta Sandro, Rovelli Enza, Foglia-Manzillo Giovanni, and Ferrari Giovanni (2016) Prevalence of previously undiagnosed abdominal aortic aneurysms in the area of Como: the ComoCuore "looking for AAA" ultrasonography screening. The international journal of cardiovascular imaging 32(8), 1213-7**
Study details	Study design: cross-sectional study Location(s): Italy Aim of the study: to report the results of a AAA screening programme in people 60-85 years old from the North-West region of Italy Study dates: September 2010 to November 2013 Sources of funding: not reported
Participants	Sample size: 1,555 people; 51.4 % (801/1,555) female Inclusion criteria: people between 60 and 85 years from the Lombardy region of Italy were included Exclusion criteria: people with known AAA or a history of AAA surgery were excluded Baseline characteristics: • Mean age: 68.8 years • Sex: 51.4% female • Hypertension: 49.1% • Dyslipidaemia: 29.5% • Diabetes: 6.7% • Coronary artery disease: 11.4% • Peripheral artery disease: 1.0% • Previous cerebrovascular accident: 1.1%
Methods	Data collection: Ultrasound imaging was used to establish the presence of AAA (defined as an infrarenal aortic diameter of 3 cm or larger). Investigators ascertained the presence of risk factors by asking participants to complete a self-reported questionnaire. Analysis: multivariate logistic regression. It is unclear what factors were adjusted for in the analysis.

Full citation	**Corrado Giovanni, Durante Alessandro, Genchi Vincenzo, Trabattoni Loris, Beretta Sandro, Rovelli Enza, Foglia-Manzillo Giovanni, and Ferrari Giovanni (2016) Prevalence of previously undiagnosed abdominal aortic aneurysms in the area of Como: the ComoCuore "looking for AAA" ultrasonography screening. The international journal of cardiovascular imaging 32(8), 1213-7**
Outcomes	Risk factors: age, sex, and smoking status
Study Appraisal using the Joanna Briggs Institute checklist	1. Were the criteria for inclusion in the sample clearly defined? Yes 2. Were the study subjects and the setting described in detail? Yes 3. Was the exposure measured in a valid and reliable way? No – the presence of risk factors was ascertained by participants completing a self-administered questionnaire. 4. Were objective, standard criteria used for measurement of the condition? Yes 5. Were confounding factors identified? Unclear 6. Were strategies to deal with confounding factors stated? Unclear 7. Were the outcomes measured in a valid and reliable way? Yes 8. Was appropriate statistical analysis used? No – stepwise regression was not performed. Instead, the variables that were statistically significant in univariate analysis or clinically associated with AAA were entered into the multivariate regression model Overall risk of bias: High Directness: directly applicable

Full citation	de Carvalho ATY, Santos AJ, Gomes CAP, et al. (2012) Infrarenal abdominal aortic aneurysm: Significance of screening in patients of public hospitals in the metropolitan region of salvador - bahia, Brazil. Jornal Vascular Brasileiro 11(4), 289-300
Study details	Study design: cross-sectional study Location(s): Brazil Aim of the study: to determine the prevalence of infrarenal AAA in people from a region in northeast Brazil (Salvador) and to identify risk factors in this population Study dates: September 2008 to October 2009 Sources of funding: authors stated that no financial support was received
Participants	Sample size: 1,350; Inclusion criteria: patients, 50 years or older ,who presented at hospitals with one or more of the following clinical conditions or risk factors were eligible for screening: diabetes systemic arterial hypertension, smoking, COPD, peripheral arterial disease, coronary insufficiency, non-ischemic congestive heart failure, dyslipidaemia, carotid stenosis, obesity, chronic kidney disease and a family history of AAA, Marfan syndrome or Ehlers–Danlos syndrome Exclusion criteria: patients with a previous diagnosis of AAA were excluded Baseline characteristics: • Mean age: 72.4 years • Sex: 66.7% female • Hypertension: 59.9% • Peripheral arterial disease: 7.6% • Coronary insufficiency: 3.9% • COPD: 3.1% • Diabetes: 46.8% • Chronic Kidney disease: 2.8% • Chronic heart failure: 3.6% • Dyslipidaemia: 15.4%
Methods	Data collection: Ultrasound imaging was used to establish the presence of AAA (defined as an infrarenal aortic diameter of 3 cm or larger). The presence of risk factors was determined by asking participants to complete a questionnaire. Analysis: multivariate logistic regression. It is unclear what factors were adjusted for in the analysis.
Outcomes	Risk factors: age, sex, smoking status, COPD, peripheral artery disease, family history of AAA, Marfan syndrome or Ehlers–Danlos syndrome
Study Appraisal using the	1. Were the criteria for inclusion in the sample clearly defined? Yes 2. Were the study subjects and the setting described in detail? Yes

Full citation	de Carvalho ATY, Santos AJ, Gomes CAP, et al. (2012) Infrarenal abdominal aortic aneurysm: Significance of screening in patients of public hospitals in the metropolitan region of salvador - bahia, Brazil. Jornal Vascular Brasileiro 11(4), 289-300
Joanna Briggs Institute checklist	3. Was the exposure measured in a valid and reliable way? No – the presence of risk factors was ascertained by participants completing a self-administered questionnaire. 4. Were objective, standard criteria used for measurement of the condition? Yes 5. Were confounding factors identified? Unclear 6. Were strategies to deal with confounding factors stated? Unclear 7. Were the outcomes measured in a valid and reliable way? Yes 8. Was appropriate statistical analysis used? Unclear Overall risk of bias: moderate Directness: directly applicable

Full citation	Derubertis BG, Trocciola SM, Ryer EJ, et al. (2007) Abdominal aortic aneurysm in women: prevalence, risk factors, and implications for screening. Journal of vascular surgery 46(4), 630-635
Study details	Study design: cross-sectional study Location(s): USA Aim of the study: to define the prevalence and risk factors associated with the development of AAA in women Study dates: May 2004 to December 2006 Sources of funding: not reported
Participants	Sample size: 10,012 women Inclusion criteria: women, over 65 years old, with at least one of the following factors were eligible for screening: hypertension, history of smoking, cardiovascular disease, or a family history of AAA. Exclusion criteria: women with a previously known AAA were excluded. Additionally, women with incomplete risk factor information were excluded. Baseline characteristics: • Mean age: 69.6 years • Sex: 100% female • Hypertension: 63.7% • Hypercholesterolemia: 63.5% • Diabetes: 13.9%

Full citation	**Derubertis BG, Trocciola SM, Ryer EJ, et al. (2007) Abdominal aortic aneurysm in women: prevalence, risk factors, and implications for screening. Journal of vascular surgery 46(4), 630-635**
	• Family history of AAA: 10.7%
	• Heart disease (myocardial infarction, coronary revascularisation or history of other cardiac surgery: 12.0%
Methods	Data collection: Ultrasound imaging was used to determine the presence of AAA (defined as an infrarenal aortic diameter of 3 cm or larger). The presence of risk factors was determined by asking participants to complete a questionnaire. Patients were considered to have hypertension, hypercholesterolemia, or diabetes if they reported that they had been given these diagnoses by a physician or were receiving treatment for these conditions. Cardiovascular disease was defined a history of myocardial infarction, a history of percutaneous or surgical coronary revascularization, or other unspecified cardiac surgery. Tobacco use was defined as greater than or equal to 100 cigarettes in a lifetime. A family history of AAA was defined as a first degree relative who was diagnosed with an AAA. Analysis: multivariate logistic regression adjusting for age, smoking history, family history, and ethnicity
Outcomes	Risk factors: age, ethnicity, smoking status, family history of AAA, and cardiovascular disease
Study Appraisal using the Joanna Briggs Institute checklist	1. Were the criteria for inclusion in the sample clearly defined? Yes 2. Were the study subjects and the setting described in detail? Yes 3. Was the exposure measured in a valid and reliable way? No – the presence of risk factors was ascertained by participants completing a self-administered questionnaire. 4. Were objective, standard criteria used for measurement of the condition? Yes 5. Were confounding factors identified? Yes 6. Were strategies to deal with confounding factors stated? Yes 7. Were the outcomes measured in a valid and reliable way? Yes 8. Was appropriate statistical analysis used? No – stepwise regression was not performed. Instead, the logistic regression model was developed based on the results of univariate analysis, with the inclusion of variables which had p-values ≤0.25. Overall risk of bias: high Directness: directly applicable

Full citation	**Hager J, LT, Carlsson P, and Lundgren F (2013) Lower prevalence than expected when screening 70-year-old men for abdominal aortic aneurysm. European Journal of Vascular and Endovascular Surgery 46(4), 453-459**
Study details	Study design: cross-sectional study Location(s): Sweden Aim of the study: to determine the contemporary screening-detected prevalence among 70-year-old men Study dates: 2008 to 2010 Sources of funding: authors stated that no financial support was received

Full citation	**Hager J, LT, Carlsson P, and Lundgren F (2013) Lower prevalence than expected when screening 70-year-old men for abdominal aortic aneurysm. European Journal of Vascular and Endovascular Surgery 46(4), 453-459**
Participants	Sample size: 4715 men Inclusion criteria: 70 year-old men were eligible for screening Exclusion criteria: men who had been previously been identified as having AAA were excluded Baseline characteristics: • Mean age: not reported • Sex: 100% male • Hypertension: 44.7% • Hyperlipidaemia: 31.3% • Diabetes: 15.5% • Coronary heart disease: 13.9% • COPD: 6.8% • Renal disease: 1.6% • Cerebrovascular disease: 7.5% • Claudication 1.6%
Methods	Data collection: Ultrasound imaging was used to establish the presence of AAA (defined as an infrarenal aortic diameter of 3 cm or larger). The presence of risk factors was determined by asking participants to complete a questionnaire that collected demographic information and contained questions relating to familial history of AAA, smoking habits, current medication, and the presence or absence of the following diseases: hypertension, hyperlipidaemia, diabetes, COPD, renal disease, cerebrovascular disease, claudication, coronary heart disease (angina pectoris and/or myocardial infarction), rheumatic disease, and cancer. Analysis: multivariate logistic regression. It is unclear what factors were adjusted for in the analysis.
Outcomes	Risk factors: smoking status, COPD, cerebrovascular disease, claudication, coronary artery, and hyperlipidaemia. Investigators also assessed as a risk factor; however, it is not listed for inclusion in the review protocol.
Study Appraisal using the Joanna Briggs Institute checklist	1. Were the criteria for inclusion in the sample clearly defined? Yes 2. Were the study subjects and the setting described in detail? No 3. Was the exposure measured in a valid and reliable way? No – the presence of risk factors was ascertained by participants completing a self-administered questionnaire. 4. Were objective, standard criteria used for measurement of the condition? Yes 5. Were confounding factors identified? Unclear 6. Were strategies to deal with confounding factors stated? Unclear 7. Were the outcomes measured in a valid and reliable way? Yes

Full citation	Hager J, LT, Carlsson P, and Lundgren F (2013) Lower prevalence than expected when screening 70-year-old men for abdominal aortic aneurysm. European Journal of Vascular and Endovascular Surgery 46(4), 453-459
	8. Was appropriate statistical analysis used? No – stepwise regression was not performed. Instead, only variables with p-values <0.1 from univariate chi-square tests were entered into the logistic regression model. Overall risk of bias: high Directness: directly applicable

Full citation	Johnsen SH, Forsdahl SH, Singh K, et al. (2010) Atherosclerosis in abdominal aortic aneurysms: a causal event or a process running in parallel? The Tromso study. Arteriosclerosis, thrombosis, and and vascular biology 30(6), 1263-8
Study details	Study design: cross-sectional study Location(s): Norway Aim of the study: to investigate the relationship between carotid, femoral, and coronary atherosclerosis and abdominal aortic diameter, and whether atherosclerosis was a risk marker for AAA Study dates: Sources of funding:
Participants	Sample size: 6,446 people Inclusion criteria: people between 55 and 74 years were eligible for screening. Additionally, a random sample of people over 25 years were included to make up 5% to 10% of the total study population. Exclusion criteria: not reported Baseline characteristics: • Mean age: men, 59.5 years; women, 60.7 years • Sex: 50.9% female • Coronary heart disease: men, 15.3%; women, 9.0%
Methods	Data collection: Ultrasound imaging was used to establish the presence of AAA (defined as an infrarenal aortic diameter of 3 cm or larger). Carotid ultrasonography was performed to ascertain the extent of atherosclerosis. A plaque was defined as a localised protrusion of the vessel wall into the lumen of at least 50%, compared with the adjacent intima-media thickness. In people with more than 1 plaque, the areas of all plaques were summarised to give the total plaque area. Investigators also measured blood pressure, non-fasting serum cholesterol and triglyceride levels, as well as serum high-density lipoprotein cholesterol levels. Information relating to smoking habits, angina pectoris, myocardial infarction and use of antihypertensive and lipid lowering drugs was ascertained via self-administered questionnaires. Analysis: multivariate logistic regression adjusting for age, sex, BMI, smoking, systolic blood pressure, total cholesterol and use of lipid-lowering and antihypertensive medication
Outcomes	Risk factors: atherosclerosis (measured by total plaque areas)
Study Appraisal using the Joanna Briggs Institute checklist	1. Were the criteria for inclusion in the sample clearly defined? Yes 2. Were the study subjects and the setting described in detail? Yes 3. Was the exposure measured in a valid and reliable way? Yes 4. Were objective, standard criteria used for measurement of the condition? Yes 5. Were confounding factors identified? Yes 6. Were strategies to deal with confounding factors stated? Yes 7. Were the outcomes measured in a valid and reliable way? Yes

Full citation	**Johnsen SH, Forsdahl SH, Singh K, et al. (2010) Atherosclerosis in abdominal aortic aneurysms: a causal event or a process running in parallel? The Tromso study. Arteriosclerosis, thrombosis, and and vascular biology 30(6), 1263-8**
	8. Was appropriate statistical analysis used? Unclear – Investigators did not report whether a stepwise approach was used to perform the multivariate logistic regression.
	Overall risk of bias: low
	Directness: directly applicable

Full citation	**Kent KC, Zwolak RM, Egorova NN, Greco G, et al. (2010) Analysis of risk factors for abdominal aortic aneurysm in a cohort of more than 3 million individuals. Journal of vascular surgery 52(3), 539-48**
	NB – a second publication evaluating the same population was produced by the same study group:
	Greco G, Egorova NN, Gelijns AC, et al. (2010) Development of a novel scoring tool for the identification of large >5 cm abdominal aortic aneurysms. Annals of surgery 252(4), 675-82
Study details	Study design: cross-sectional study
	Location(s): USA
	Aim of the study: to identify risk factors associated with AAA in people who underwent ultrasound screening
	Study dates: 2003 to 2008
	Sources of funding: this study was funded by a grant to the Society for Vascular Surgery from Life Line Screening (a private screening company)
Participants	Sample size: 3,056,455 people; sex-specific proportions were not reported
	Inclusion criteria: self-referred patients who paid for vascular screening tests. In people with multiple screenings, only the most recent record with complete information was included.
	Exclusion criteria: individuals with records where gender, age and smoking states were messing, were excluded. Furthermore, people with a history of AAA repair, and people over 85 years were excluded.
	Baseline characteristics:
	• Mean age: not reported
	• Sex: 64.7% female
	• Hypertension: 65.1%
	• Hyperlipidaemia: 54%
	• Coronary heart disease: 6.8%
	• Carotid disease: 2.5%
	• History of cerebrovascular disease: 5.5%

Full citation	**Kent KC, Zwolak RM, Egorova NN, Greco G, et al. (2010) Analysis of risk factors for abdominal aortic aneurysm in a cohort of more than 3 million individuals. Journal of vascular surgery 52(3), 539-48** **NB – a second publication evaluating the same population was produced by the same study group:** **Greco G, Egorova NN, Gelijns AC, et al. (2010) Development of a novel scoring tool for the identification of large >5 cm abdominal aortic aneurysms. Annals of surgery 252(4), 675-82**
	• Peripheral arterial disease: 3.0% • Diabetes: 10.7%
Methods	Data collection: Ultrasound imaging was used to establish the presence of AAA (defined as an infrarenal aortic diameter of 3 cm or larger). Systolic and diastolic blood pressure were also taken at the time of screening. Data on risk factors were collected by asking participants to complete a self-administered questionnaire that included questions on demographics, height, weight, coronary artery disease (previous myocardial infarction or coronary revascularisation), cerebrovascular disease (previous transient ischaemic attack, stroke or carotid artery revascularisation), hypertension, hypercholesterolemia, diabetes, smoking, smoking, exercise, dietary habits, and a family history of AAA, lower extremity arterial disease, cardiac or cerebrovascular disease. Analysis: Multivariate logistic regression. It was unclear what factors were adjusted for.
Outcomes	Risk factors: age, sex, smoking status, BMI, ethnicity, hypertension, coronary artery disease, family history of AAA, hypercholesterolemia, diabetes, peripheral artery disease, and cerebrovascular disease. Investigators also assessed physical activity, as well as fruit, vegetable and nut consumption as risk factors; however, these factors are not listed for inclusion in the review protocol.
Study Appraisal using the Joanna Briggs Institute checklist	1. Were the criteria for inclusion in the sample clearly defined? Yes 2. Were the study subjects and the setting described in detail? Yes 3. Was the exposure measured in a valid and reliable way? No – the presence of risk factors was ascertained by participants completing a self-administered questionnaire. 4. Were objective, standard criteria used for measurement of the condition? Yes 5. Were confounding factors identified? Yes 6. Were strategies to deal with confounding factors stated? Yes 7. Were the outcomes measured in a valid and reliable way? Yes 8. Was appropriate statistical analysis used? No – stepwise regression was not performed. Instead, variables with p-values <0.2 in univariate analyses were included in a logistic regression model. Then only significant variables within the model (p-values <0.05) were left in the final model Overall risk of bias: high Directness: directly applicable

Full citation	**Le MTQ, Jamrozik K, Davis TME et al. (2007) Negative association between infra-renal aortic diameter and glycaemia: the Health in Men Study. European journal of vascular and endovascular surgery : the official journal of the European Society for Vascular Surgery 33(5), 599-604** **NB – other publications evaluating the same population were produced by the same study group:** **Golledge J, Clancy P, Jamrozik K, et al. (2007) Obesity, adipokines, and abdominal aortic aneurysm: Health in Men study. Circulation 116(20), 2275-9** **Jamrozik K, Norman PE, Spencer CA et al. (2000) Screening for abdominal aortic aneurysm: lessons from a population-based study. The Medical journal of Australia 173(7), 345-50**
Study details	Study design: cross-sectional study Location(s): Australia Aim of the study: to assess the relationship between both diabetes and blood glucose levels with the presence of AAA Study dates: April 1996 to January 1999 Sources of funding: not reported
Participants	Sample size: 12,203 men Inclusion criteria: men between 65 and 83 years old were eligible for screening Exclusion criteria: not reported Baseline characteristics: • Mean age: not reported • Sex: 100% male • History of cardiovascular disease: 43.8% • Hypertension: 44.0% • Dyslipidaemia: 35.8% • Diabetes: 12.1%
Methods	Data collection: Ultrasound imaging was used to establish the presence of AAA (defined as an infrarenal aortic diameter of 3 cm or larger). Information on risk factors was acquired by asking participants to complete a self-administered questionnaire which captured data on medical history, life style, height, weight, blood pressure and cardiovascular disease. Analysis: multivariate logistic regression adjusting for aortic diameter
Outcomes	Risk factors: age, BMI, smoking status, history of cardiovascular disease, hypertension, dyslipidaemia diabetes, blood pressure and family history of AAA. Investigators also assessed vigorous exercise, and place of birth as risk factors; however, these factors are not listed for inclusion in the review protocol.
Study Appraisal	1. Were the criteria for inclusion in the sample clearly defined? Yes 2. Were the study subjects and the setting described in detail? Yes

Full citation	Le MTQ, Jamrozik K, Davis TME et al. (2007) Negative association between infra-renal aortic diameter and glycaemia: the Health in Men Study. European journal of vascular and endovascular surgery : the official journal of the European Society for Vascular Surgery 33(5), 599-604 NB – other publications evaluating the same population were produced by the same study group: Golledge J, Clancy P, Jamrozik K, et al. (2007) Obesity, adipokines, and abdominal aortic aneurysm: Health in Men study. Circulation 116(20), 2275-9 Jamrozik K, Norman PE, Spencer CA et al. (2000) Screening for abdominal aortic aneurysm: lessons from a population-based study. The Medical journal of Australia 173(7), 345-50
using the Joanna Briggs Institute checklist	3. Was the exposure measured in a valid and reliable way? No – the presence of risk factors was ascertained by participants completing a self-administered questionnaire. 4. Were objective, standard criteria used for measurement of the condition? Yes 5. Were confounding factors identified? Yes 6. Were strategies to deal with confounding factors stated? Yes 7. Were the outcomes measured in a valid and reliable way? Yes 8. Was appropriate statistical analysis used? Yes Overall risk of bias: moderate Directness: directly applicable

Full citation	**Lederle FA, Johnson GR, Wilson SE, et al. (2000) The Aneurysm Detection and Management study screening program: Validation cohort and final results. Archives of Internal Medicine 160(10), 1425-1430** **NB – A second older publication of the same study was produced by the same authors:** **Lederle FA, Johnson GR, Wilson SE, et al. (1997) Prevalence and associations of abdominal aortic aneurysm detected through screening. Annals of Internal Medicine 126(6), 441-449**
Study details	Study design: cross-sectional study Location(s): USA Aim of the study: to assess the prevalence of positive and negative risk factors for AAA Study dates: October 1992 to July 1997 Sources of funding: not reported
Participants	Sample size: first cohort, 73,451; second cohort, 52,745; combined group, 126,196 Inclusion criteria: people who were 50 to 79 years old and had no history of AAA were included. In people with multiple screenings, only the first screening session were included. Exclusion criteria: people who reported previously being told that they had an AAA were excluded Baseline characteristics: • Mean age: 66.0 years • Sex: 97.3% male • Hypertension: 54.1% • Hyperlipidaemia: 52.3% • Coronary heart disease: 36.8% • Claudication: 6.0% • Cerebrovascular disease: 10.8% • Deep vein thrombosis: 7.0% • Diabetes: 17.7% • COPD: 13.4%
Methods	Data collection: cross-sectional data was collected from 2 separate cohorts, during 2 different time periods (October 1992 to March 1995, and April 1995 to July 1997). Ultrasound imaging was used to establish the presence of AAA. Multiple analyses considered different definitions of AAA including; an infrarenal aortic diameter of 3 cm or larger, an infrarenal aortic diameter of 4 cm or larger, and the ratio of infrarenal and suprarenal aortic diameter of 1.5 or greater. For the purpose of this review, only data relating to AAAs categorised as infrarenal aortic diameters of 3 cm or larger were considered. Before ultrasonographic examination, all participants completed a questionnaire that asked about

Full citation	Lederle FA, Johnson GR, Wilson SE, et al. (2000) The Aneurysm Detection and Management study screening program: Validation cohort and final results. Archives of Internal Medicine 160(10), 1425-1430 NB – A second older publication of the same study was produced by the same authors: Lederle FA, Johnson GR, Wilson SE, et al. (1997) Prevalence and associations of abdominal aortic aneurysm detected through screening. Annals of Internal Medicine 126(6), 441-449
	demographic information and possible risk factors. The questionnaire asked whether they were told by a clinician that they had any of the risk factors under investigation. Analysis: Analysis: multivariate logistic regression. It is unclear what factors were adjusted for in the analysis.
Outcomes	Risk factors: age, sex, ethnicity, family history of AAA, smoking status, hypertension, hypercholesterolemia, coronary artery disease, claudication, cerebral vascular disease, atherosclerosis, diabetes, COPD. Investigators also assessed height, weight, waist circumference, deep vein thrombosis, cancer and history of abdominal imaging as risk factors; however, these factors were not listed for inclusion in the review protocol.
Study Appraisal using the Joanna Briggs Institute checklist	1. Were the criteria for inclusion in the sample clearly defined? Yes 2. Were the study subjects and the setting described in detail? Yes 3. Was the exposure measured in a valid and reliable way? No – the presence of risk factors was ascertained by participants completing a self-administered questionnaire. 4. Were objective, standard criteria used for measurement of the condition? Yes 5. Were confounding factors identified? Unclear 6. Were strategies to deal with confounding factors stated? Unclear 7. Were the outcomes measured in a valid and reliable way? Yes 8. Was appropriate statistical analysis used? No- the multivariate analysis included all variables that were considered in the self-administered questionnaire Overall risk of bias: high Directness: directly applicable

Full citation	Makrygiannis G, Labalue P, Erpicum M, et al. (2016) Extending Abdominal Aortic Aneurysm Detection to Older Age Groups: Preliminary Results from the Liege Screening Programme. Annals of vascular surgery 36, 55-63
Study details	Study design: cross-sectional study Location(s): Belgium Aim of the study: to report the results of a AAA screening programme in people 65-85 years old from the County of Chaudfontaine in Belgium Study dates: May to November 2014 Sources of funding: This study was funded by the Aneurysmal Pathology Foundation (APF),
Participants	Sample size: 1,101 people Inclusion criteria: men aged 65-85 years and women aged 74 to 85 years from the county of Chaudfontaine in Belgium were included Exclusion criteria: not reported Baseline characteristics: • Mean age: men, 73.6 years; women, 78.8 years • Sex: 65.6% male • Hypertension: men, 67.9%; women, 72.3% • Hyperlipidaemia: men, 62.6%; women, 62.5 % • Diabetes: men, 19.1%; women, 14.0% • Coronary artery disease: men, 17.3%; women, 7.4% • Peripheral arterial disease: men, 6.8%; women, 3.7% • COPD: men, 5.1%; women, 3.7% • Stroke: men, 7.9%; women, 8.2% • Renal insufficiency: men, 1.5%; women, 3.2%
Methods	Data collection: Ultrasound imaging was used to establish the presence of AAA (defined as an infrarenal aortic diameter of 3 cm or larger). Investigators ascertained the presence of risk factors by asking participants to complete a self-reported questionnaire. Participants were asked to report self-reported use of drugs, smoking status (current, former, and never), and history of hypercholesterolemia, diabetes mellitus, hypertension, coronary artery disease (bypass surgery and angioplasty with or without stenting), peripheral arterial occlusive disease, stroke and transient ischemic attack, chronic obstructive pulmonary disease, renal insufficiency, cancer, and inguinal hernia. Analysis: multivariate logistic regression. It is unclear what factors were adjusted for in the analysis.
Outcomes	Risk factors: age, smoking status, hypercholesterolemia, peripheral artery disease, and coronary artery disease
Study Appraisal using the Joanna	1. Were the criteria for inclusion in the sample clearly defined? Yes 2. Were the study subjects and the setting described in detail? Yes 3. Was the exposure measured in a valid and reliable way? No – the presence of risk factors was ascertained by participants completing a self-administered questionnaire.

Full citation	**Makrygiannis G, Labalue P, Erpicum M, et al. (2016) Extending Abdominal Aortic Aneurysm Detection to Older Age Groups: Preliminary Results from the Liege Screening Programme. Annals of vascular surgery 36, 55-63**
Briggs Institute checklist	4. Were objective, standard criteria used for measurement of the condition? Yes 5. Were confounding factors identified? Unclear 6. Were strategies to deal with confounding factors stated? Unclear 7. Were the outcomes measured in a valid and reliable way? Yes 8. Was appropriate statistical analysis used? Unclear – Investigators did not report whether a stepwise approach was used to perform the multivariate logistic regression. Overall risk of bias: Moderate Directness: directly applicable

Full citation	**Mark-Christensen A, Lindholt J S, Diederichsen A, et al. (2017) Association Between Diverticular Disease and Abdominal Aortic Aneurysms: Pooled Analysis of Two Population Based Screening Cohorts. European Journal of Vascular and Endovascular Surgery 54(6), 772-777**
Study details	Study design: cross-sectional study combining data from 2 Danish screening programmes Location(s): Denmark Aim of the study: to assess risk factors associated with AAA Study dates: first screening cohort, 2008 to 2010; second cohort, from 2015 onwards Sources of funding: authors state that no funding was received
Participants	Sample size: 24,632 people Inclusion criteria: people aged 65-74 from 2 different regions in Denmark were eligible for screening Exclusion criteria: authors state that no exclusion criteria were applied Baseline characteristics: • Age >70 years old: 43% • Sex: 97% male • Hypertension: 52% • Peripheral arterial disease: 10% • Diabetes: 11% • Family history of AAA: 3%
Methods	Data collection: Either ultrasound imaging or non-contrast computed-tomography were used to establish the presence of AAA (defined as an infrarenal aortic diameter of 3 cm or larger). Investigators ascertained the presence of risk factors (AAA, hypertension, peripheral arterial

Full citation	**Mark-Christensen A, Lindholt J S, Diederichsen A, et al. (2017) Association Between Diverticular Disease and Abdominal Aortic Aneurysms: Pooled Analysis of Two Population Based Screening Cohorts. European Journal of Vascular and Endovascular Surgery 54(6), 772-777**
	disease, diabetes, current smoking status, smoking status and use of oral corticosteroids) via clinical examination, medical records or patient interview. Analysis: multivariate logistic regression
Outcomes	Risk factors: age, sex, smoking status, BMI, hypertension, smoking, and family history of AAA
Study Appraisal using the Joanna Briggs Institute checklist	1. Were the criteria for inclusion in the sample clearly defined? Yes 2. Were the study subjects and the setting described in detail? Yes 3. Was the exposure measured in a valid and reliable way? Yes 4. Were objective, standard criteria used for measurement of the condition? Yes 5. Were confounding factors identified? Yes 6. Were strategies to deal with confounding factors stated? Yes 7. Were the outcomes measured in a valid and reliable way? Yes 8. Was appropriate statistical analysis used? No – Only covariates significantly associated with AAA on multivariate analysis were included in the multivariate models Overall risk of bias: Moderate Directness: directly applicable

Full citation	**Pleumeekers JCM, Hoes AW, Hofman A, et al. (1999) Selecting subjects for ultrasonographic screening for aneurysms of the abdominal aorta: Four different strategies. International Journal of Epidemiology 28(4), 682-686**
Study details	Study design: cross-sectional study Location(s): Netherlands Aim of the study: to evaluate whether the effectiveness of ultrasound screening for AAA could be increased by preselecting people who were at high risk of AAA Study dates: not reported Sources of funding: not reported
Participants	Sample size: 5,328; Inclusion criteria: people 55 years or older living in a suburb in the Netherlands were eligible for ultrasound screening Exclusion criteria: people with a history of AAA repair or people in whom it was technically impossible to visualise the abdominal aorta were excluded. Furthermore, people living in nursing homes were excluded due to limitations in transporting ultrasound equipment. Baseline characteristics: • Mean age: men, 67.7 years • Sex: 58% female • Angina: 6.8% • Intermittent claudication: 1.5% • History of myocardial infarction: 22% • History of stroke: 3.1% • Hypertension: 21.1%
Methods	Data collection: Ultrasound imaging was used to establish the presence of AAA. An AAA was defined as a distal aortic diameter of 3.5 cm or larger, or when the ratio between the distal and proximal aorta was greater than 1.5. The presence of risk factors was determined by performing physical examinations, taking blood samples and asking participants to complete a self-administered questionnaire. Claudication was defined as a history of angina. A history of myocardial infarction was considered positive if the patient reported having been hospitalised for the conditions. Hypertension was defined as use of blood pressure lowering drugs. Analysis: multivariate logistic regression adjusting for age and sex
Outcomes	Risk factors: age, sex, smoking status, hypertension (antihypertensive drug use), angina pectoris, intermittent claudication, myocardial infarction, hypercholesterolemia, peripheral arterial disease (indicated by an ankle arm index ≤0.9), and enlarged aorta on palpation. Investigators also assessed bruit over abdominal aorta as risk factors; however, this not listed for inclusion in the review protocol.
Study Appraisal using the Joanna	1. Were the criteria for inclusion in the sample clearly defined? Yes 2. Were the study subjects and the setting described in detail? Yes

Full citation	**Pleumeekers JCM, Hoes AW, Hofman A, et al. (1999) Selecting subjects for ultrasonographic screening for aneurysms of the abdominal aorta: Four different strategies. International Journal of Epidemiology 28(4), 682-686**
Briggs Institute checklist	3. Was the exposure measured in a valid and reliable way? No – Although the presence of some risk factors was determined by performing physical examinations, the presence of other risk factors was determined by asking participants to complete a questionnaire.
	4. Were objective, standard criteria used for measurement of the condition? Yes
	5. Were confounding factors identified? Yes
	6. Were strategies to deal with confounding factors stated? Yes
	7. Were the outcomes measured in a valid and reliable way? Yes
	8. Was appropriate statistical analysis used? No – stepwise regression was not performed. Instead, only variables with p-values <0.2 in multivariate analyses were explored in the multivariate logistic regression model.
	Overall risk of bias: high
	Directness: directly applicable

Full citation	**Salvador-Gonzalez B, Martin-Baranera M, Borque-Ortega A, et al. (2016) Prevalence of Abdominal Aortic Aneurysm in Men Aged 65-74 Years in a Metropolitan Area in North-East Spain. European journal of vascular and endovascular surgery : the official journal of the European Society for Vascular Surgery 52(1), 75-81**
Study details	Study design: cross-sectional study Location(s): Spain Aim of the study: to estimate the current screening prevalence of AAA in men aged 65 to 74 years in a metropolitan area in north-east Spain and to identify associated risk factors Study dates: September 2007 to June 2010 Sources of funding: the study was part funded by a grant from the Jordi Gol Institute for Primary Care Research
Participants	Sample size: 651 men Inclusion criteria: men between 65 and 74 years old registered at healthcare facilities in Barcelona were included. Exclusion criteria: people with a life expectancy less than 2 year, limited quality of life (receiving home care, living in a care home, or with a Barthel index <90), previous diagnosis of AAA, a history of aorto-femoral surgery, and people of non-Caucasian ethnicity were excluded. Baseline characteristics: • Mean age: men, 70.2 years • Sex: 100% male • Hypertension: 53.3% • Diabetes: 24.5% • Hypercholesterolemia: 45.2% • Cardiovascular disease: 22.7% • Angor pectoris: 9.7% • Myocardial infarction: 6.9% • Cerebrovascular disease: 9.2% • Intermittent claudication: 4.8%
Methods	Data collection: Ultrasound imaging was used to establish the presence of AAA (defined as an infrarenal aortic diameter of 3 cm or larger). The presence of hypertension, diabetes, hypercholesterolemia, abdominal obesity (waist circumference >102 cm), and metabolic syndrome was determined by reviewing patient's medical records. Data on cardiovascular diseases (angor pectoris, myocardial infarction, intermittent claudication, or cerebral vascular disease) were obtained from clinical histories, and family history of AAA was ascertained from a clinical interview. Analysis: multivariate logistic regression. It is unclear what factors were adjusted for in the analysis.
Outcomes	Risk factors: smoking status and myocardial infarction

Full citation	**Salvador-Gonzalez B, Martin-Baranera M, Borque-Ortega A, et al. (2016) Prevalence of Abdominal Aortic Aneurysm in Men Aged 65-74 Years in a Metropolitan Area in North-East Spain. European journal of vascular and endovascular surgery : the official journal of the European Society for Vascular Surgery 52(1), 75-81**
Study Appraisal using the Joanna Briggs Institute checklist	1. Were the criteria for inclusion in the sample clearly defined? Yes 2. Were the study subjects and the setting described in detail? Yes 3. Was the exposure measured in a valid and reliable way? Yes 4. Were objective, standard criteria used for measurement of the condition? Yes 5. Were confounding factors identified? Unclear 6. Were strategies to deal with confounding factors stated? Unclear 7. Were the outcomes measured in a valid and reliable way? Yes 8. Was appropriate statistical analysis used? No – stepwise regression was not performed. Instead, only variables with p-values ≤0.1 in multivariate analyses were explored in the multivariate logistic regression model. Overall risk of bias: moderate Directness: directly applicable

Full citation	**Singh K, Bonaa KH, Jacobsen BK, et al. (2001) Prevalence of and risk factors for abdominal aortic aneurysms in a population-based study : The Tromso Study. American journal of epidemiology 154(3), 236-44**
Study details	Study design: cross-sectional study Location(s): Norway Aim of the study: to study the prevalence of and risk factors for abdominal aortic aneurysm, as well as the distribution of infrarenal aortic diameter, in both men and women in a general population Study dates: September 1994 to October 1995 Sources of funding: the study was supported by grants from the Norwegian Research Council and the Norwegian Council on Cardiovascular Diseases
Participants	Sample size: 6,386 Inclusion criteria: people between 55 and 74 years were eligible for screening. Additionally, a random sample of people over 25 years were included to make up 5% to 10% of the total study population. Exclusion criteria: not reported Baseline characteristics: • Mean age: not reported • Sex: 53.6% female

Full citation	**Singh K, Bonaa KH, Jacobsen BK, et al. (2001) Prevalence of and risk factors for abdominal aortic aneurysms in a population-based study : The Tromso Study. American journal of epidemiology 154(3), 236-44**
	• Comorbidities: not reported
Methods	Data collection: Ultrasound imaging was used to establish the presence of AAA. AAA was considered present if aortic diameter at renal level was equal to or greater than 3.5 cm in either the anterior-posterior or transverse plane, the infrarenal aortic diameter was more than 5 mm larger than the renal aortic diameter in either plane, and/or a localised dilatation of the aorta was present. Information relating to some risk factors was gained from physical examination; however, the presence of other risk factors was determined asking participants to complete a self-administered questionnaire. Analysis: multivariate logistic regression adjusted for age
Outcomes	Risk factors: age, BMI, smoking status, hypertension (antihypertensive drug use), blood pressure, hyperlipidaemia, and hypercholesterolemia. Investigators also assessed plasma fibringen, serum creatinine, blood platelet counts, white blood cell count, and physical activity as risk factors; however, these factors were not listed for inclusion in the review protocol.
Study Appraisal using the Joanna Briggs Institute checklist	1. Were the criteria for inclusion in the sample clearly defined? Yes 2. Were the study subjects and the setting described in detail? Yes 3. Was the exposure measured in a valid and reliable way? No – Although the presence of some risk factors was determined by performing physical examinations, the presence of other risk factors was determined by asking participants to complete a questionnaire. 4. Were objective, standard criteria used for measurement of the condition? 5. Were confounding factors identified? Yes 6. Were strategies to deal with confounding factors stated? Yes 7. Were the outcomes measured in a valid and reliable way? Yes 8. Was appropriate statistical analysis used? Unclear – Investigators did not report whether a stepwise approach was used to perform the multivariate logistic regression. Overall risk of bias: moderate Directness: directly applicable

Full citation	Vardulaki KA, Walker NM, Day NE, et al. (2000) Quantifying the risks of hypertension, age, sex and smoking in patients with abdominal aortic aneurysm. British Journal of Surgery 87(2), 195-200
Study details	Study design: cross-sectional study Location(s): UK Aim of the study: to assess the prevalence of AAA among patients with hypertension and those taking antihypertensive medication (normotensives and current hypertensives), relative to normotensive untreated subjects in a community-based sample of men and women aged between 65 and 79 years Study dates: 1988 to 1995 Sources of funding: not reported
Participants	Sample size: 5,356; (3,035/5,356) female Inclusion criteria: people between 65 and 79 years old were included. No further details were provided. Exclusion criteria: not reported Baseline characteristics: • Mean age: not reported • Sex: 56.7% male Comorbidities: not reported
Methods	Data collection: Ultrasound imaging was used to establish the presence of AAA (defined as an infrarenal aortic diameter of 3 cm or larger). Analysis: multivariate logistic regression adjusting for age, sex and smoking status. Information on demographics, medical history, family history of AAA, smoking, occupation, and medication use was obtained by asking participants to complete a self-administered questionnaire. Analysis: multivariate logistic regression adjusted for age and sex
Outcomes	Risk factors: age, sex, smoking status, blood pressure and antihypertensive medication use
Study Appraisal using the Joanna Briggs Institute checklist	1. Were the criteria for inclusion in the sample clearly defined? No 2. Were the study subjects and the setting described in detail? Yes 3. Was the exposure measured in a valid and reliable way? No – the presence of risk factors was ascertained by participants completing a self-administered questionnaire. 4. Were objective, standard criteria used for measurement of the condition? Yes 5. Were confounding factors identified? Yes 6. Were strategies to deal with confounding factors stated? Yes 7. Were the outcomes measured in a valid and reliable way? Yes 8. Was appropriate statistical analysis used? Unclear – Investigators did not report whether a stepwise approach was used to perform the multivariate logistic regression. Overall risk of bias: moderate

Full citation	**Vardulaki KA, Walker NM, Day NE, et al. (2000) Quantifying the risks of hypertension, age, sex and smoking in patients with abdominal aortic aneurysm. British Journal of Surgery 87(2), 195-200**
	Directness: directly applicable