THE LANCET

Supplementary appendix

This appendix formed part of the original submission and has been peer reviewed. We post it as supplied by the authors.

Supplement to: Ulug P, Sweeting MJ, von Allmen RS, Thompson SG, Powell JT on behalf of the SWAN collaborators. Morphological suitability for endovascular repair, non-intervention rates, and operative mortality in women and men assessed for intact abdominal aortic aneurysm repair: systematic reviews with meta-analysis. *Lancet* 2017; published online April 25. http://dx.doi.org/10.1016/S0140-6736(17)30639-6.

Women assessed for intact abdominal aortic aneurysm repair fare worse than men: systematic reviews of morphological suitability for endovascular repair, non-intervention rates and 30-day operative mortality

Supplementary information

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Search Strategy: EVAR suitability review

MESH.EXACT.EXPLODE("Endovascular Procedures") OR MESH.EXACT.EXPLODE("Stents") OR MESH.EXACT("Vascular Surgical Procedures") OR MESH.EXACT("Blood Vessel Prosthesis") OR MESH.EXACT("Blood Vessel Prosthesis Implantation") OR MESH.EXACT("Vascular Grafting")
EMB.EXACT("endovascular aneurysm repair") OR EMB.EXACT("aortic aneurysm endovascular graft") OR EMB.EXACT("endovascular surgery") OR EMB.EXACT.EXPLODE("stent") OR EMB.EXACT.EXPLODE("blood vessel graft") OR EMB.EXACT("endoprosthesis") OR EMB.EXACT.EXPLODE("vascular stent") OR EMB.EXACT("aneurysm surgery") OR EMB.EXACT("vascular surgery") OR EMB.EXACT.EXPLODE("blood vessel prosthesis") OR EMB.EXACT.EXPLODE("blood vessel transplantation")
ti,ab(endovascular or endostent[*4] or stent[*4] or evar or fevar or pevar or endoprosthe[*4] or endograft[*4] or graft[*4])
incraft or palmaz or zenith or dynalink or hemobahn or luminex* or memotherm or wallstent or viabahn or nitinol or intracoil or tantalum or powerlink or talent or excluder or aorfix or endologix or anaconda or triascular or cordis or endurant or quantum or aneurx or ancure or ankura or "e vita" or "e xl" or "endomed endofit" or fortron or hercules or lifepath or ovation or treovance or ventana or nellix
MESH.EXACT("Aortic Aneurysm, Abdominal")
EMB.EXACT("abdominal aorta aneurysm")
ti,ab(abdom[*6] near/5 aort[*2] near/5 (aneurysm[*1] or aneurism[*1]))
ti,ab(aaa or aaas or iaaa or iaaas)
ti,ab(abdom[*6] near/5 aort[*2] near/5 (balloon[*3] or dilat[*6] or bulg[*4] or expan[*6]))
MESH.EXACT("Female") OR MESH.EXACT.EXPLODE("Women") OR MESH.EXACT.EXPLODE("Women's Health")
EMB.EXACT.EXPLODE("female") OR EMB.EXACT("women's health")
ti,ab(female or females or woman or women)
MESH.EXACT("Sex Factors") OR MESH.EXACT("Sex Distribution") OR MESH.EXACT("Sex Ratio") OR MESH.EXACT("Sex Characteristics")
EMB.EXACT("sex difference") OR EMB.EXACT("gender and sex") OR EMB.EXACT("gender") OR EMB.EXACT("sex ratio")
ti,ab(gender or genders or sex)
MESH(ah) OR MESH(anatom[*6]) OR MESH(morpholog[*6]) OR MESH.EXACT("Iliac Artery") OR MESH(calcification)
EMB(anatom[*6]) OR EMB(morpholog[*6]) OR EMB.EXACT.EXPLODE("pathological anatomy") OR EMB.EXACT("neck circumference") OR EMB.EXACT("artery diameter") OR EMB.EXACT("blood vessel diameter") OR EMB.EXACT.EXPLODE("iliac artery") OR EMB.EXACT("artery calcification") OR EMB.EXACT("calcification") OR EMB.EXACT("blood vessel calcification")

ti,ab(anatom[*6] or morpholog[*6] or diameter[*1] or circumference[*1] or size[*1] or calcif[*8] or angle[*1] or angulat[4] or tortuous or tortuosit[*3] or calibre[*1] or calibre[*1] or "access vessel[*1]" or "iliac arter[*3]" or "ileal arter[*3]" or "ilial arter[*3]" or aortoiliac or "aorto iliac")
ti,ab(neck[*2] near/5 (aneurysm[*2] or aneurism[*2] or infrarenal or "infra renal" or aortic or proximal or short or shorten[*2] or favourable or unfavourable or challenging or length[*1] or shape[*1] or hostile)) or ti,ab(funnel or conical)
ti,ab("instructions for use" or ifu or ifus)

Limit : start 01.01.2005

Search Strategy: Non-intervention review search strategy

MESH.EXACT.EXPLODE("Endovascular Procedures") OR MESH.EXACT.EXPLODE("Stents") OR MESH.EXACT("Vascular Surgical Procedures") OR MESH.EXACT("Blood Vessel Prosthesis") OR MESH.EXACT("Blood Vessel Prosthesis Implantation") OR MESH.EXACT("Vascular Grafting")
EMB.EXACT.EXPLODE("blood vessel prosthesis") OR (EMB.EXACT("aorta graft") OR EMB.EXACT("blood vessel transplantation")) OR repair OR (endovascular surgery) OR (EMB.EXACT("endovascular aneurysm repair") OR EMB.EXACT.EXPLODE("aortic aneurysm endovascular graft") OR EMB.EXACT.EXPLODE("endovascular surgery")) OR (open surgery)
MESH.EXACT("Aortic Aneurysm, Abdominal")
EMB.EXACT("abdominal aorta aneurysm")
ti,ab(abdom[*6] near/5 aort[*2] near/5 (aneurysm[*1] or aneurism[*1]))
ti,ab(aaa or aaas or iaaa or iaaas)
ti,ab(abdom[*6] near/5 aort[*2] near/5 (balloon[*3] or dilat[*6] or bulg[*4] or expan[*6]))
MESH.EXACT("Female") OR MESH.EXACT.EXPLODE("Women") OR MESH.EXACT.EXPLODE("Women's Health")
EMB.EXACT.EXPLODE("female") OR EMB.EXACT("women's health")
ti,ab(female or females or woman or women)
MESH.EXACT("Sex Factors") OR MESH.EXACT("Sex Distribution") OR MESH.EXACT("Sex Ratio") OR MESH.EXACT("Sex Characteristics")
EMB.EXACT("sex difference") OR EMB.EXACT("gender and sex") OR EMB.EXACT("gender") OR EMB.EXACT("sex ratio")
ti,ab(gender or genders or sex)
(treatment refusal) OR (MESH.EXACT("Refusal to Treat")) OR (MESH.EXACT("Patient Selection"))
COMORBIDITY AND MESH.EXACT("Comorbidity") OR (MESH.EXACT("Risk Factors")) AND (MESH.EXACT("Risk Assessment"))
(MESH.EXACT("Elective Surgical Procedures")) or ti,ab("elective")
(ti,ab("treatment refusal" or "undergo treatment")) OR (MESH.EXACT("Refusal to Treat")) OR (MESH.EXACT("Patient Selection")) OR ("turn down" or "turndown") OR (MESH.EXACT("Palliative Care")) OR palliat[*3] OR (ti,ab("nonoperated" or "non-operated"))

Limit : start 01.01.2005

Search Strategy: 30-day operative mortality review

MESH.EXACT.EXPLODE("Aortic Aneurysm, Abdominal") OR (abdominal aort*) AND aneurysm*
MESH.EXACT("Blood Vessel Prosthesis") OR MESH.EXACT("Blood Vessel Prosthesis Implantation") OR MESH.EXACT("Vascular Grafting") OR repair OR (endovascular surgery) OR (open surgery) OR MESH.EXACT("Aortic Aneurysm, Abdominal -- surgery")
MESH.EXACT("Aortic Aneurysm, Abdominal -- mortality") OR MESH.EXACT("Aortic Aneurysm, Abdominal -- complications") OR MESH.EXACT("Hospital Mortality") OR MESH.EXACT("Minimally Invasive Surgical Procedures -- mortality") OR MESH.EXACT("Vascular Surgical Procedures -- mortality") OR MESH.EXACT.EXPLODE("Vascular Surgical Procedures : E.04.100.814 -- adverse effects") OR mortality
MESH.EXACT.EXPLODE("Treatment Outcome")
EMB.EXACT.EXPLODE("abdominal aorta aneurysm") OR (ti,ab(abdominal aort*) AND aneurysm)
EMB.EXACT.EXPLODE("blood vessel prosthesis") OR (EMB.EXACT("aorta graft") OR EMB.EXACT("blood vessel transplantation")) OR repair OR (endovascular surgery) OR (EMB.EXACT("endovascular aneurysm repair") OR EMB.EXACT.EXPLODE("aortic aneurysm endovascular graft") OR EMB.EXACT.EXPLODE("endovascular surgery")) OR (open surgery)
ti,ab(female or females or woman or women)
MESH.EXACT("Sex Factors") OR MESH.EXACT("Sex Distribution") OR MESH.EXACT("Sex Ratio") OR MESH.EXACT("Sex Characteristics")
EMB.EXACT("sex difference") OR EMB.EXACT("gender and sex") OR EMB.EXACT("gender") OR EMB.EXACT("sex ratio")
ti,ab(gender or genders or sex)
(EMB.EXACT("cardiovascular mortality") OR EMB.EXACT.EXPLODE("surgical mortality")) OR EMB.EXACT.EXPLODE("mortality") OR mortality
EMB.EXACT("treatment outcome")

Limit : start 01.01.2009

The protocols for these reviews were developed according to PRISMA-P guidelines (http://www.prisma-statement.org/Extensions/Protocols.aspx)

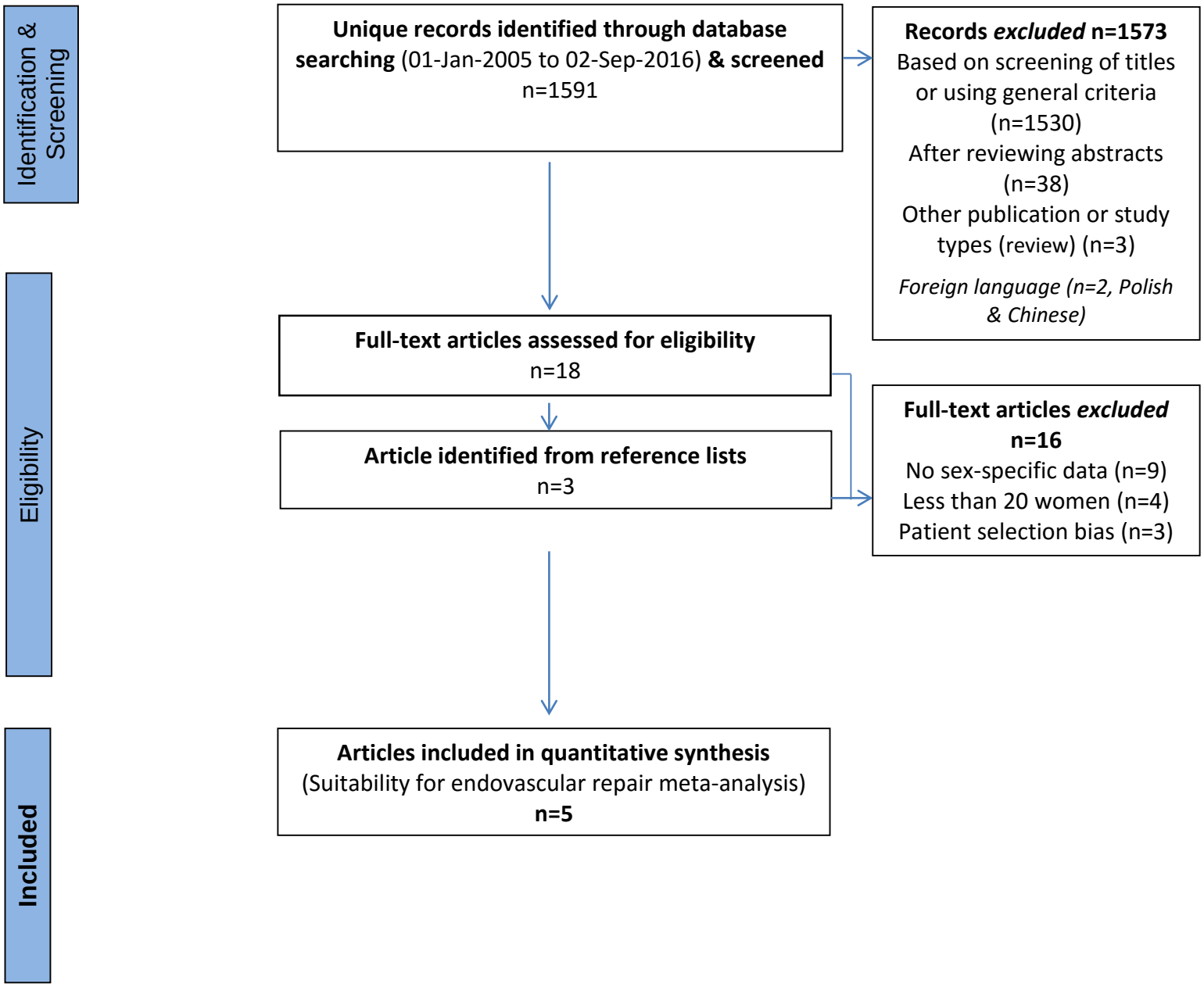
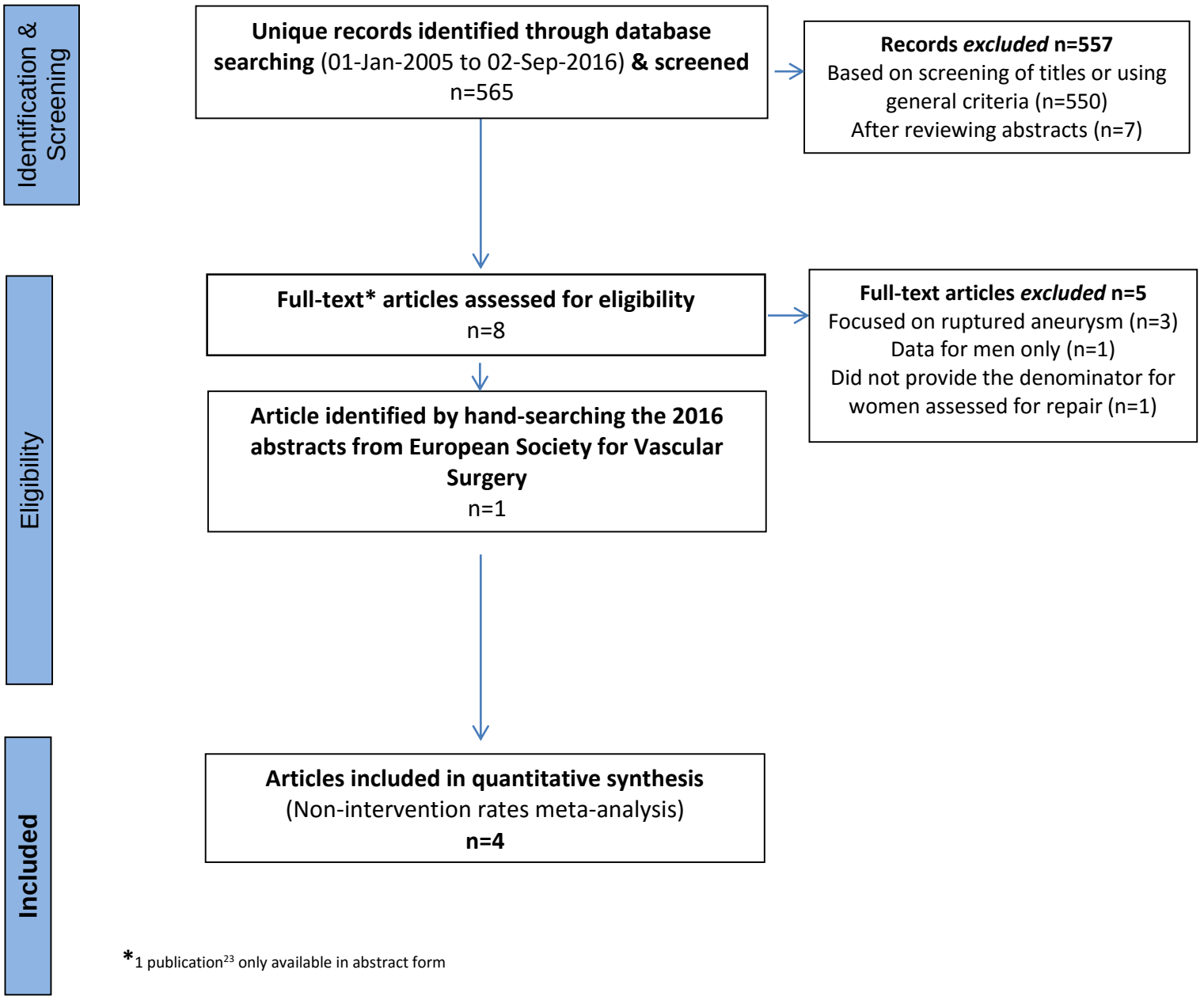


Figure S 1 EVAR suitability review



*1 publication[23] only available in abstract form

Figure S 2 Non-intervention review

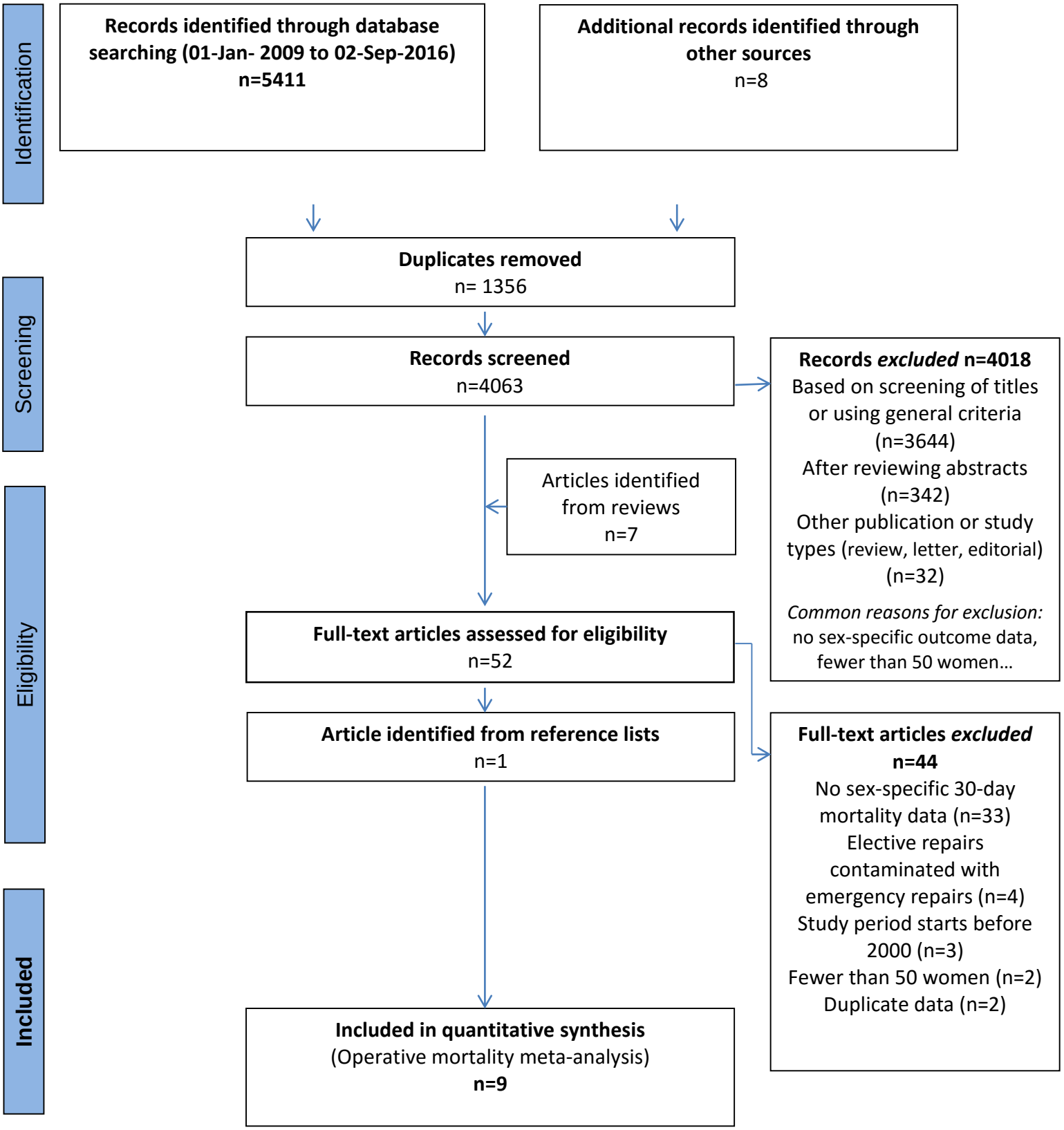


Figure S 3 30-day operative mortality review

Table S 1 Characteristics of the included studies in EVAR suitability review

Author (country)	Patient base	Suitability criteria	N-O* score	N	Age (mean)	Aneurysm morphology (mean)					EVAR Suitable (%)
						AAA diam. (mm)	Neck diam. (mm)	Neck length (mm)	Neck angle (α)°	Iliac or access artery diam. (mm)	
Kristmundsson[13] (2014) Sweden	All AAAs with CT scans 2006-07	Within any IFU for Excluder, Endurant or Zenith Flex grafts ND 18-32 NL≥ 10 NA≤75 IAD≥7.5	3	41 women	na	58.6	26.8	16.9	30.0	6.4	11/41 (27%)
				200 men	na	64.9	27.0	22.8	46.3	8.2	108/200 (54%)
Hultgren[14] (2013) Sweden	All elective repairs in one clinic 2006-08	ND≤32 NL≥15 NA≤60 7.5≤ IAD ≤20	5	32 women	72	56	-	-	-	-	15/32 (47%)
				140 men	72	65	-	-	-	-	80/140 (57%)
Sweet[15] (2011) USA	All AAAs>4.0cm with CT scans 1997-2009	18≤ND≤32 NL≥15 NA<60	5	251 women	77	58	24	15	28	5.6	63/251 (25%)
				812 men	74	59	25	19	20	7.0	374/812 (46%)
Park[16] (2011) Korea	All AAAs>4.0cm with CT scan between 2003-2010	Within any IFU for AneuRx, Excluder, Talent, or Zenith grafts ND≤32 NL≥10 NA≤60 IAD≥8	4	35 women	73 men & women	-	-	-	-	-	15/35 (43%)
				156 men		-	-	-	-	-	74/156 (47%)
Moise[17] (2006) USA	Patients evaluated for EVAR between 2000-2003	ND≤29 NL≥15 NA≤60 IAD≥7	4	41 women	na	-	-	-	-	-	15/41 (37%)
				199 men	na	-	-	-	-	-	128/199 (64%)

*N-O=Newcastle Ottowa score, assesses selection, comparability and outcomes, with a maximum score of 10 points. AAA, abdominal aortic aneurysm, IFU, Instructions For Use, ND proximal neck diameter (mm), NL proximal neck length (mm), NA, proximal neck angle (°), IAD internal iliac diameter (mm).

Table S 2 Characteristics of the included studies: non-intervention rates for elective repair review

Author & period	N-O[#] score n/8	Age information	Non-intervention rate for men (%)	Non-intervention rate for women (%)
Whittaker[24] Jan 2013 to Dec 2015	5	N/A	83/389 (21%)	24/65 (37%)
Scott[21] Jan 2006 to Apr 2012	5	median overall 73 years	123/516 (24%)	15/59 (25%)
Gorst[23] July 2007 to May 2011	5	mean overall 82 years	58/254 (23%)	29/78 (37%)
Karthikesalingham[22] Jan 2008 to Dec 2009	5	mean overall 75 years	16/206 (8%)	16/45 (41%)

[#]N-O Newcastle Ottowa score for selection and outcome, with a maximum score of 8
All studies were from the UK, Reference 22 is the only one from a specialist tertiary referral centre.

Table S 3 Characteristics of the included studies in the 30-day operative mortality review, ordered by date of AAA repair

Author (country)	Repair date(s)	Derivation of cohort	Intervention E, EVAR OR, open repair	N-O score n/10	N= w, women m, men	Mean age (y)	30-day mortality EVAR (%)	30-day mortality open repair (%)
Lowry[32] UK	Apr 2006 – Mar 2015	Hospital Episode Statistics	E	7	2304	78^	57/2304 (2.5)	*n/a*
					18215	76^	283/18215 (1.6)	
Nevidomskyte[25] USA	Jul 2010 - Sep 2013	Statewide registry VI-SCOAP	E, OR	6	216w	73.1	5/160 (3.1)	5/56 (8.9)
					848m	73.0	4/696 (0.6)	4/152 (2.6)
Chung[31!] USA	Jun 2003 - Jul 2012	Single centre	E	5	121w	n/a~	2/121 (1.7)	*n/a*
					617m		11/617 (1.8)	
Lo[27] USA	2003 - 2011	VSGNE	E, OR	7	820w	75^	5/408 (1.2)	15/412 (3.6)
					2777m	72^	15/1660 (0.9)	19/1117 (1.7)
Mani[28] Sweden	2006 - 2010	Swedvasc	E, OR	9	765w	n/a	10/329 (3)	17/436 (3.9)
					3367m		39/1669 (2.3)	23/1698 (1.4)
Ramanan[26] USA	2007- 2009	ACS NSQIP	OR	7	728w	n/a	n/a	34/728 (4.7)
					2117m			61/2117 (2.9)
Mehta[29] USA	2002 - 2009	Single centre	E, OR	7	553w	n/a	11/344 (3.2)	12/209 (5.7)
					1827m		12/1248 (1.0)	27/579 (4.7)
Powell[5!] 5[#] countries	2000 - 2009	EVAR 1, ACE DREAM, OVER RCTs	E, OR	9	148w	75.2	1/77 (1.3)	5/71 (6.9)
					2545m	71.3	15/1312 (1.1)	35/1233 (2.8)
Schermerhorn[30] USA	2008 only	Medicare	E, OR	6	5421w	n/a	77/3657 (2.1)	123/1764 (7.0)
					19705m		203/15590 (1.3)	214/4115 (5.2)

VI-SCOAP= Washington state Vascular-Interventional Surgical Care and Outcomes Assessment Program; **ACS NSQIP**= American College of Surgeons National Surgical Quality Improvement Program; **VSGNE**=Vascular Study Group of New England; **Swedvasc**= Swedish National Quality Registry for Vascular Surgery; **Medicare**= national social insurance program; **RCTs**= Randomised controlled trials

[!] Reports asymptomatic intact AAA only; ~Only provided for the whole cohort: Women: 77.8 (±7.6); Men: 74.7 (±8.3), no separate age data for the late era; # U.K., U.S.A, France, Netherlands/Belgium, patients operated from 2000 included in the current analysis only; ^median.