

Appendiks til Astrid Austvoll-Dahlgren, Vigdis Underland, Gyri Hval Straumann, Louise Forsetlund.
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Dette appendikset er et tillegg til artikkelen og er ikke bearbeidet redaksjonelt.

Study ID	Setting	Unit (surgeon/department/hospital)	Patients (description and N)	Data source (name of registry/area/time)	Measures to quality check registry data (for example cross-referencing with patient records)	Condition (diagnoses)	Patients or conditions excluded (diagnosis)	Procedure (open or endovascular)	Type of admission	Outcome
Allareddy 2010 (and 2007)	USA	1207 hospitals	35104 procedures	The Nationwide Inpatient Sample (NIS) for years 2000 through 2003	Unclear	Abdominal aorta aneurysm (codes not reported)	Patients <18 years. Included also diagnoses and procedures not meeting our inclusion criteria: coronary artery bypass graft (CABG), percutaneous coronary intervention (PCI), pancreatectomy (PAN), and esophagectomy (ESO. Emergency/ruptured)	Open and endovascular (ICD-9 codes 38.34, 38.44, 38.64, 39.71, 39.25)	Elective	Mortality and complications
Amundsen 1990	Norway	26 surgical units	279 patients, 155 patients (ruptured)	Unclear	Unclear	Abdominal aortic aneurysm and ruptured (codes not reported)	Patients dying from ruptured aneurysms at home or on their way to the hospital were not included.	Open (procedure codes not reported)	Elective and acute	Mortality

Anderson 2014	USA	Hospitals, numbers unclear	159333 patients	The Nationwide Inpatient Sample (NIS) from 1998 to 2010	Unclear	Abdomin al aortic aneurys m and ruptured (codes not reported)	Patients <18 years, and patients with more than 1 procedure of interest during the same hospitalization were excluded.	Open and endovascula r (procedure codes not reported)	Elective and acute	Mortality
Birkmeyer 2002	USA	2819 hospitals	140577 patients	Data obtained from Medicare Provider Analysis and Review (MEDPAR) files and the denominator files from the Center for Medicare and Medicaid Services for the years 1994 to 1999.	Unclear	Abdomin al aorta aneurys m (codes not reported)	Ruptured AAA and thoracoabdominal aneurysms. Patients <65 and >99 years of age. Includes diagnoses not meeting our inclusion criteria, such as coronary-artery bypass grafting, colectomy, gastrectomy, esophagectomy, pancreatic resection, nephrectomy, cystectomy, pulmonary resection	Open and endovascula r (procedure codes not reported)	Elective	Mortality

Birkmeyer 2003	USA	6276 surgeons	39794 patients	Data obtained from Medicare Provider Analysis and Review (MEDPAR) files and the denominator files from the Center for Medicare and Medicaid Services for the years 1998 to 1999.	Unclear	Abdomin al aorta aneurys m (codes not reported)	Ruptured AAA and thoracoabdominal aneurysms. Patients <65 and >99 years of age. Includes diagnoses not meeting our inclusion criteria, such as coronary-artery bypass grafting, colectomy, gastrectomy, esophagectomy, pancreatic resection, nephrectomy, cystectomy, pulmonary resection	Open and endovascula r (procedure codes not reported)	Elective	Mortality
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Brooke 2008	USA (California)	140 hospitals (81 endo and 103 open)	6406 open cases and 3120 endo cases	Hospital demographics collected by survey data 2001 to 2005 from Leapfrog Group Hospital Quality and Safety Surveys. Self-reported information. Outcomes collected from The California Office of Statewide Health Planning and Development (OHSPD) database	Unclear	Abdominal aorta aneurysm (codes not reported)		Open and endovascular (ICD-9 codes 38.34, 38.36, 38.44, 38.64, 39.25, 39.52, 39.71)	Elective	Mortality, length of hospital stay
Bush 2003	USA	123 hospitals	1904 patients of which 717 were endovascular and 1187 were open	Department of Veterans Affairs (VA) National Surgical Quality Improvement Program (NSQIP) database 2001 to 2003	Database includes detailed clinical data. Additional data collected by trained personnel.	Abdominal aorta aneurysm (ICD-9 codes 441.4)	Patients with secondary diagnostic codes for ruptured AAA or thoracic or thoracoabdominal aortic aneurysm were excluded from the analysis. CPT codes representing open repair after EVAR (34830, 34831, 34832) were also excluded.	Both (Open CPT codes 35081 and 35102 and EVAR CPT codes 34800, 34802, and 34804.	Elective	Mortality and complications

Cowan 2003	USA	Hospitals, numbers unclear	Unclear	Nationwide Inpatient Sample (NIS) from 1988 to 1998	Unclear	Abdominal aorta aneurysm (ICD-9 441.3, 441.5)	No restrictions on age	Open (ICD-9 codes 38.44, 38.45)	Acute	Mortality
Dardik 1998	USA, Maryland	47 hospitals/ 45 hospitals (rupture)/ 226 surgeons	In total 3820 patients of which 527 were operations for ruptured	Maryland Health Services Cost review Commission (HSCRC) database from 1990 and 1995	Double checked by going through two hospital records	Abdominal aorta aneurysm (ICD-9 code not reported) and ruptured abdominal aortic aneurysm (ICD-9 codes 441.02 and) 441.3)	Patients undergoing other operations	Open (ICD-9 codes 38.34, 38.44, 38.64, 38.84, 39.54)	Elective and acute	Mortality, length of stay, costs
Dimick 2002b	USA	507 hospitals in 1996 and 536 in 1997	Total patients 13887, of which 7980 were elective and 5907 were urgent/emergent	Nationwide Inpatient Sample (NIS). Sample taken between 1996 to 1997	Unclear	Abdominal aorta aneurysm (code not reported) , ruptured or acute abdominal aorta aneurysm (ICD- 9 code 441.3)	Primary diagnosis of thoracoabdominal aneurysm, dissection of abdominal aorta and rupture of thoracoabdominal aneurysm, patients younger than 40 years, and diagnostic codes associated with injury to a blood vessel.	Open (ICD-9 code 38.44)	Elective and acute	Mortality, complications, hospital length of stay

Dimick 2002a (and 2004)	USA, Maryland	52 hospitals	2987 patients	Uniform Discharge Dataset managed by the Health Services Cost Review Commission (HSCRC) of Maryland. Sample taken from 1994 to 1996	Unclear	Abdomin al aorta aneurys m (code not reported) , ruptured or acute abdomin al aorta aneurys m (ICD- 9 code 441.3)	Patients with a diagnosis of blood vessel injury	Open (ICD-9 codes 38.44 and 39.25)	Elective and acute	Mortality, complications, length of stay
Dimick 2003	USA	536 hospitals, 879 surgeons	3912 patients	Nationwide Inpatient Sample (NIS). A database of hospital discharges, representativ e stratified sample of USA discharges. Sample taken from 1997	Unclear	Abdomin al aorta aneurys m (codes not reported)		Open (ICD-9 codes 38.44 and 39.25)	Elective	Mortality
Dimick 2008	USA	2301 hospitals, 1357 hospitals (endo)	54203 patients, 26750 patients (endo)	National Analytic files from the Center for Medicare Provider Analysis and Review (MEDPAR). Sample taken 2001 and 2003	Unclear	Abdomin al aortic aneurys m (ICD-9 code 441.4) and ruptured (ICD-9 code 441.3)	Patients <65 years, and patients with ruptured AAA	Open and endovascula r (ICD-9 codes 38.44 and 39.71)	Elective and acute	Mortality

Dua 2014	USA	Hospitals, N unclear	630901 admissions of which approximately 558 347 admissions were elective, unclear how many of these were open/endovascular	Nationwide Inpatient Sample (NIS). A database of hospital discharges, representative stratified sample of USA discharges. Sample taken between 1998 and 2011.	Unclear	Abdominal aortic aneurysm (ICD-9 code 441.4 and 441.9) and ruptured (ICD-9 code 441.3)		Open and endovascular (ICD-9 codes 38.34,38.44, 38.64, 39.52 and 39.71)	Elective and acute	Mortality
Dueck 2004 + (Dueck 2004b)	Canada, Ontario	Hospitals and surgeons	13701 patients (elective)/ 2601 patients (rupture)	The Ontario Health Insurance Plan captures 95% of the physician billings in Ontario. Data was collected for the period April 1992 to March 2001.	Unclear	Abdominal aortic aneurysm (fee code R802, R816, and R817) and rupture (fee code E627).		Open and endovascular (procedure codes not reported)	Elective and acute	Mortality

Eckstein 2007	Germany	131 hospitals	10163 patients	A surgeon-led registry to document representative data about indications, treatments and complications. Voluntary participation. This study evaluated data from January 1999 to December 2004 (six years).	Unclear	Abdominal aortic aneurysm (ICD-10 codes I173 or I174)	Hospitals that had not been part of the registry for the last 4 years and patients who underwent another procedure simultaneously. Patients with ruptured AAA.	Open (procedure codes not reported)	Elective	Mortality, complications, length of stay, process measures
Finks 2011 (same authors as Birkmeyer 2002, but this sample continues from the Birkmeyer 2002)	USA	Hospitals, range from 1860 to 2339, Hospitals	Patients, range from 56333 to 71170	National Medicare data from 1999 through 2008	Unclear	Abdominal aortic aneurysm (codes not reported)	Included also diagnoses and procedures not meeting our inclusion criteria: esophagostomy, pancreatectomy, lung resection, cystectomy, coronary-artery bypass grafting (CABG), and aortic-valve replacement. AAA patients with diagnosis code or procedure code indicating rupture of the aneurysm, the presence of a thoracoabdominal aneurysm, or both	Open and endovascular (ICD-9 codes 38.34, 38.44, 38.64, 39.25 and 39.71)	Elective	Mortality

Glance 2007	USA, California	301 hospitals	8855 patients	California State Inpatient Database, between 1998 to 2000	Unclear	Abdominal aortic aneurysm and ruptured (codes not reported)	The study included also diagnosis not meeting our inclusion criteria: coronary angioplasty and coronary artery bypass	Open (ICD-9 codes 38.34, 38.44 and 38.64)		Mortality
Gonzalez 2014	USA	Hospitals, number unclear	20690 patients	National sample form Medicare provider analysis and review files for 2005 and 2006	Unclear	Abdominal aortic aneurysm and ruptured (codes not reported)	Patients <65 + >99. The study included also diagnosis not meeting our inclusion criteria: aortic valve repair and coronary artery bypass	Open and endovascular (procedure codes not reported)	Unclear if it is only elective or both included in the analysis	Mortality, complications and failure to rescue
Goodney 2003	USA	Hospitals, number unclear	12573 patients	The national Medicare database (MEDPAR, 1994 to 1999)	Unclear	Abdominal aorta aneurysm (codes not reported)	Patients <65 and >99. Patients with rupture or thoracoabdominal aneurysm. The study included diagnoses not meeting our inclusion criteria: coronary artery bypass, aortic valve replacement, mitral valve replacement.	Open and endovascular (procedure codes not reported)	Elective	30-day mortality (including in-hospital death)

Hernandez-Boussard 2012	USA	Hospitals, number unclear	182843 patients	Nationwide Inpatient Sample database (NIS), from 2005 to 2008	As the NIS sampling frame changes over time, NIS Trends Supplement data were used to address the sampling changes over the time period (Healthcare Cost and Utilization Project 2008).	Abdominal aortic aneurysm and ruptured (codes not reported)	The study included also diagnosis not meeting our inclusion criteria: gastric bypass and coronary artery bypass	Open and endovascular (ICD-9 codes 38.44 and 39.71)	Unclear if it is only elective or both included in the analysis	Mortality and complications
Hill 2008	USA	Aprox. 555 hospitals	46901 patients	Nationwide Inpatient Sample (NIS). A database of hospital discharges, representative stratified sample of USA discharges. From 1998 to 2004	Unclear	Abdominal aortic aneurysm (ICD-9 code 441.4)		Open and endovascular (ICD-9 codes 38.34, 38.44 and 39.71)	Elective	Mortality
Holt 2007	UK	Hospitals, numbers unclear	15515 elective procedures/ 6462 ruptured repairs/ 4845 urgent procedures	Hospital Episode Statistics (HES) from 2000 to 2005.	Compared with the hospital's Patient administration system (PAS) to double check data	Abdominal aortic aneurysm and ruptured (ICD 10 codes I173 or I174)		Open (OPCS-4 codes L184-L189, L194-L199, L222-L229, L258-L259, L481-L489, L652)	Elective	Mortality, complications, length of stay

Holt 2009	England	134 Hospitals (trusts), 91 Hospitals (trusts) (endo)	5668 patients, 1645 patients (endo)	Hospital Episode Statistics (HES) for April 2005 to March 2007 (2 years)	Compared with the hospital's Patient administration system (PAS) to double check data	Abdominal aortic aneurysm (ICD-10 codes 71.3 or 71.4)		Open and endovascular (OPCS 4.3: L27.1 to 9, L28.1 to 9, L26.5, L26.6, L26.7)	Elective	Mortality, length of stay
Huber 2001	USA	Surgeons, numbers unclear	Unclear, national sample	The Medicare files obtained from the Health Care Finance Administration (HCFA), 1996	Included both personal records and hospital data	Abdominal aorta aneurysm (codes not reported)		Open (Current Procedural Terminology (CPT) codes 35081, repair defect of artery, abdominal aorta, 35091 repair defect of artery, aorta, involving visceral vessels, and 35102 repair defect of artery, aorta, involving iliac vessels for elective)	Elective	Mortality

Illonzo 2014	USA	Hospitals, number of hospitals unclear	295851 patients (open)/ 195928 patients (endo)	Medicare Inpatient Standard Analytical and denominator files for patients for the period 1995 to 2011.	Unclear	Abdominal aortic aneurysm (codes not reported)	Patients undergoing thoracic, thoracoabdominal, or ruptured aneurysm repair were excluded	Open and endovascular (procedure codes not reported)	Elective	Mortality, complications
Jibawi 2006	UK, England	223 hospital trusts	31078 patients	Hospital Episode Statistics (HES) in a five years period (1997-2002)	Admin database matched with patient records	Abdominal aorta aneurysm and ruptured abdominal aortic aneurysm (ICD-10 codes I71.x)	Thoracic procedures	Open and endovascular (OPCS-4 codes L16.x - L26.x)	Elective and acute	Mortality
Kantonen 1997 (and 1999)	Finland	23 hospitals (surgeons, number unclear)	929 patients (elective)/ 610 patients (rupture)	The nationwide vascular registry, and Statistics Finland the Finnvasc registry from 1991 to 1995	For patients not found in Finvasc registry copies of hospital record of the last visit was found.	Abdominal aorta aneurysm and ruptured abdominal aortic aneurysm (codes not reported)		Open (procedure codes not reported)	Elective	Mortality, complications

Karthikesalingam 2014	UK/ USA	Hospitals, numbers unclear	11 799 patients (UK), 23838 patients (USA)	Hospital Episode Statistics (HES) from 2005 to 2010, Nationwide Inpatient Sample (NIS) from 2005 to 2010	Unclear	Abdominal aorta aneurysm (OPCS-4 codes (UK) 1713 and 1718, ICD-9 codes 441.3 and 441.5)		Open and endovascular (OPCS-4 codes L194-199, L231, L236, L238-239, L254, L258, L259, L49, L271, L275, L276, L281, L285, L286, L289, ICD-9 38.44, 38.34, 39.25 and 39.71)		Mortality
Khuri 1999	USA	107 hospitals	3767 cases	Department of Veterans Affairs (VA) National Surgical Quality Improvement Program (NSQIP) database 1991 to 1999		Abdominal aorta aneurysm (CPT-code 4 35081)		Open (CPT-4 codes 35081)	Elective	Mortality
Landon 2010	USA	Hospitals, numbers unclear	45 660 patients, this number includes patients receiving both open and endovascular procedures	Medicare program 2001–2004	Checked with physician claims	Abdominal aorta aneurysm (ICD-9 441.4)	Patients <65, diagnosis codes for AAA rupture (441.3), thoracic aneurysm (441.1, 441.2), thoracoabdominal aortic aneurysm (441.6, 441.7), aortic dissection (441.0*), repair of the thoracic aorta (38.35, 38.45, 39.73) or visceral/renal bypass (38.46, 39.24, 39.26).	Open and endovascular (ICD-9 codes 38.44, 39.25 and 39.71)	Elective	Mortality

Manheim 1998	USA, California	Hospitals, numbers unclear	35130 procedures	California patient discharge data, contain all non-federal inpatient hospital discharges between 1982 and 1994.	Unclear	Abdominal aorta aneurysm, ruptured or acute abdominal aorta aneurysm (codes not reported)		Open (ICD-9 codes 38.34, 38.44 and 38.64)	Elective and acute	Mortality
Massarweh 2011	USA, Washington	Hospitals, numbers unclear	7724 patients	Comprehensive Hospital Abstract Reporting System (CHARS) database, a population-based, administrative dataset comprising all nonfederal inpatient discharges in Washington State, January 1, 1994 and December 31, 2007	Unclear	Abdominal aorta aneurysm (codes not reported)	Acute, included also diagnoses and procedures not meeting our inclusion criteria: pancreatic and esophageal resection. Patients <18 years	Open and endovascular (procedure codes not reported)	Elective	Mortality, complications, readmissions

McPhee 2009	USA	Hospitals	24570 patients	Nationwide Inpatient Sample (NIS). A database of hospital discharges, representative stratified sample of USA discharges. Sample taken between 2001 and 2006	Unclear	Abdominal aorta aneurysm (ICD-9 code 441.4) and ruptured or acute abdominal aorta aneurysm (ICD-9 code 441.3)		Open and endovascular (ICD-9 38.44, 39.25, and 39.71)		Mortality
McPhee 2011	USA	Hospitals and surgeons, numbers unclear	5972 patients (open), 8121 procedures (endo)	Nationwide Inpatient Sample (NIS). A database of hospital discharges, representative stratified sample of USA discharges. Sample taken between 2003 and 2007		Abdominal aorta aneurysm (ICD-9 code 441.4)	Patients <40 years were excluded	Open and endovascular (ICD-9 codes 38.44, 39.25 and 39.71)	Elective and acute	Mortality

Mell 2012	USA	Hospitals, numbers unclear	2616 patients	Data obtained from Medicare and Medicaid services through the Chronic Condition Data Warehouse, administered by the Iowa Foundation for Medical Care. Includes a 5% sample of Medicare patients in the USA. Sample for 2005 and 2006	Unclear	Abdominal aortic aneurysm (ICD-9 code 441.4 and 441.9)	Ruptured AAA, aortic dissections, thoracic aneurysms, thoracoabdominal aneurysms or aneurysm diagnosis without treatment code. Patients <65 and >99 years of age	Open and endovascular (ICD-9 codes 38.34, 38.44, 38.64, 39.52, 39.71)	Elective	Mortality or reshospitalisation
Modrall 2011	USA	6857 surgeons	22986 patients	The Nationwide Inpatient Sample (NIS) for the years 2000 to 2008	Unclear	Abdominal aortic aneurysm (ICD-9 codes 441.4 and 441.9)		Open (ICD-9 codes 38.34 and 38.44)	Probably elective	Mortality

Pearce 1999	USA, Florida	Hospitals and surgeons, numbers differ by diagnosis and year	Unclear	The Florida Agency for Health Care Administration state admission data from 1992 to 1996	Unclear	Abdominal aorta aneurysm (ICD-9 code 441.4), and ruptured abdominal aorta aneurysm (ICD-9 code 441.3)		Open (ICD-9 codes 38.34 and 38.44)	Elective	Mortality and complications
Pronovost 1999	USA, Maryland	46 hospitals, surgeons, number unclear	2606 patients	Uniform Discharge Dataset managed by the Health Services Cost Review Commission (HSCRC) of Maryland. Sample taken from 1994 to 1996 + questionnaire sent to all units about organisational characteristics such as staffing and care processes.	Unclear	Abdominal aorta aneurysm (code not reported), ruptured or acute abdominal aorta aneurysm (ICD-9 code 441.3)	Patients <30 years with injury to blood vessels.	Open (ICD-9 38.44 and 39.25)	Acute and elective	Mortality, hospital length of stay, days of intensive care

Reames 2014	USA	Hospitals, ranged from 2301 to 1888	National sample, ranged from 62327 to 46105	National Medicare claims data from 2000 through 2009	Unclear	Abdominal aorta aneurysm (code not reported)	Patients < 65 years. A rupture of the aneurysm, presence of a thoracoabdominal aneurysm, or dissection. We also excluded patients who underwent simultaneous coronary artery bypass grafting and valve surgery. Gastrointestinal (colectomy, esophagostomy, and pancreatectomy), 3 cardiac (aortic valve replacement, mitral valve replacement.	Open and endovascular (procedure codes not reported)	Elective	Mortality
Regenbogen 2012	USA	1939 hospitals	69141 patients	Medicaid claims data, 2005 to 2007. Cost data were collected from all payment data including inpatient, outpatient, carrier (i.e. physician), home health, skilled nursing facility, long stay hospital, hospice and durable medical equipment files)	Unclear	Abdominal aorta aneurysm (codes not reported)	Patients <65 years and >99 years, ruptured AAA, and living in hospice or nursing homes. Patients with thoracoabdominal aneurysms. Coronary artery bypass surgery and colectomy for cancer, ruptured AAA	Open and endovascular (procedure codes not reported)	Elective	Mortality and costs

Rutledge 1996	USA, North Carolina	Hospitals and surgeons	12658 patients, 1480 patients (rupture)	Data were obtained from four main data sets. Data on hospitals in the state were obtained from the North Carolina American Hospital Association database. Data on county demographic information was obtained from the Area Resource File. Physician-specific information (age and board certification) was obtained from the North Carolina Board of Medical Examiner's database	Unclear	Abdominal aorta aneurysm (ICD-9 code 441.4) and ruptured abdominal aortic aneurysm (ICD-9 code 441.3)		Open and endovascular (procedure codes not reported)	Elective and acute	Survival
Tu 2001	Canada,	130	5878	Physician	Unclear	Abdomin	Patients with ruptured	Open (R-	Elective	Mortality

	Ontario	surgeons	patients	billing codes for AAA surgery (R802, R816, R817) taken from the Ontario Health Insurance Plan (OHIP) physician claims database. 1992 to 1996		al aorta aneurysm (codes not reported)	aneurysms were excluded from the study	codes 802, 816, 817)		
Urbach 2004	Canada, Ontario	57 hospitals	6279 patients	Unclear, "electronic records"	Unclear	Abdominal aorta aneurysm (codes not reported)	Included also diagnoses and procedures not meeting our inclusion criteria: oesophagectomy, excision of a segment of the colon or rectum for colorectal cancer, pancreaticoduodenectomy, major lung resection (lobectomy or pneumonectomy) for lung cancer	Open and endovascular (procedure codes not reported)	Elective	Mortality
Vogel 2011	USA	Hospitals , range from 1335 to 1116, Hospitals , range from 1188 to 1291 (endo)	17210 procedures (open)/ 42155 procedures (endo)	The Medicare database from 2005 to 2007	Unclear	Abdominal aorta aneurysm (ICD-9 code 441.4)	Patients <65 years, and patients with ruptured AAA	Open and endovascular (ICD-9 codes 38.34, 38.44, 38.64 and 39.71)	Elective	Mortality, complications, length of stay, costs

Wen 1996	Canada, Ontario	All Ontario hospitals, numbers unclear	5492 patients/1203 patients (ruptured)	Hospital discharge abstracts from Ontario years 1988-92	Unclear	Abdominal aorta aneurysm (ICD-9 code 441.4), and ruptured abdominal aorta aneurysm (ICD-9 code 441.3)	Ruptured AAA + patients were excluded if they underwent a secondary procedure involving any operations on the heart - for example coronary vessels, pericardium, valves, or septa (CC codes 47-49). Also excluded were patients with the following secondary diagnoses: dissection aneurysm (ICD-9 code 4410) or thoracic aneurysm (ICD-9 codes 4411-4412); aneurysm of unspecified site, ruptured (ICD-9 code 4415); aortic aneurysm of unspecified site, without mention of rupture (ICD-9 code 4419); arterial embolism and thrombosis of abdominal (ICD-9 code 4440) or thoracic aorta (ICD-9 code 4441); congenital anomalies of aorta (ICD-9 code 7472) including coarctation (ICD-9 code 7471); or injury to abdominal aorta (ICD-9 code 9420).	Open (CC code 5034 or 5024 or 5125, for ruptured 5125)	Elective and acute	Mortality, length of stay
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