

Table S1 Checklist used to assess the methodological quality in included studies

1. Is a clear description of the study objective and comparators provided?
2. Are the characteristics of target population and subgroups described and analysed?
3. Is the setting and location of the study stated?
4. Is the study perspective clearly stated?
5. Is the time horizon of costs and benefits clear?
6. Is the discount rate stated or an explanation is given if costs or benefits are not discounted (where applicable)?
7. Are the source and methods used to collect effectiveness data described?
8. Are the primary outcome measure(s) for economic evaluation clearly stated?
9. Are the quantities of resources reported separately from their unit costs?
10. Are approaches used to estimate resource use and cost clear?
11. Are the cost components clearly stated?
12. Is the currency/price year explicitly stated?
13. Are the analytic methods supporting the evaluation including methods for dealing with skewed, missing, or censored data, extrapolation methods, methods for pooling data, approaches to validate or make adjustments to a model, methods for handling population heterogeneity and uncertainty described in details?
14. Are the incremental costs and outcomes reported (If applicable incremental cost-effectiveness ratios reported)?
15. Is sensitivity analysis carried out?
16. Are the study limitations discussed?
17. Is the study generalisability discussed?

Table S2 Basic information on included studies

Study Reference	Study	Population sample assessed	Healthcare assessed	Alternatives compared	Costs analysed	Outcomes assessed
1	Nallamothu BK, Saint S, Ramsey SD, et al. The role of hospital volume in coronary artery bypass grafting: is more always better? <i>J Am Coll Cardiol</i> 2001;38(7):1923-30.	N=13,644 , >35years age, having undergone isolated, non-emergent CABG, mean age=64.5 years	Non emergent coronary artery bypass grafting	Low Vs High volume hospitals	Direct and indirect hospital costs are said to be included - but cost components not clear	In-hospital mortality rate, length of hospital stay
2	Dimick JB, Cattaneo SM, Lipsett PA, et al. Hospital volume is related to clinical and economic outcomes of esophageal resection in Maryland. <i>The Annals of Thoracic Surgery</i> 2001;72(2):334-40.	N=1,136, All patients discharged from hospitals with esophageal resection during the study period, mean age=61 years	Esophageal resection	High Vs Medium Vs Low volume hospitals	Hospital charges- but cost components not clear	In-hospital mortality rate, length of hospital stay
3	Lyman S, Jones EC, Bach PB, et al. The association between hospital volume and total shoulder arthroplasty outcomes. <i>Clin Orthop Relat Res</i> 2005(432):132-7.	N=1,307, All patients undergoing elective shoulder arthroplasty during the study period, mean age=65.6 years	Shoulder arthroplasty	High Vs Medium Vs Low volume hospitals	Hospital charges reported on the inpatient bill- but cost components not clear	Re-admission rate within 60 days, revision rate within 12 or 24 months, mortality rate within 60 days, length of hospital stay
4	Bardach NS, Olson SJ, Elkins JS, et al. Regionalization of treatment for subarachnoid hemorrhage: a cost-utility analysis. <i>Circulation</i> 2004;109(18):2207-12.	Base case of 59 year old woman with subarachnoid hemorrhage modelled	Treatment of Subarachnoid Hemorrhage	High Vs Low volume hospitals	Hospital costs, costs of transfer from low volume to high volume hospital, cost of caring disabled,	QALYs
5	Concannon TW, Kent DM, Normand SL, et al. Comparative effectiveness of ST-segment-elevation myocardial infarction regionalization strategies. <i>Circ Cardiovasc Qual Outcomes</i> 2010;3(5):506-13.	2000 patients simulated, 55.5-66.6 years mean age in different subgroups	Primary percutaneous coronary intervention (PCI)	Standard care Vs Diverting patients to hospitals with PCI facilities Vs scenarios adding PCI facilities to existing hospitals	Not clear what cost components were analysed	QALYs

6	Gandjour A, Weyler EJ. Cost-effectiveness of referrals to high-volume hospitals: an analysis based on a probabilistic Markov model for hip fracture surgeries. <i>Health Care Manag Sci</i> 2006; 9 (4):359-69.	Hypothetical hip fracture patients hospitalized for surgery, mean age=74 years modelled.	Hip fracture surgery	High Vs Low volume hospitals	Hospital costs including labor and materials costs for clinical care and ancillary services such as radiology, catering and cleaning; costs of hospital infrastructure, travel costs to hospital	Mortality rate, QALYs
7	Geomini PM, Kruitwagen RF, Bremer GL, et al. Should we centralise care for the patient suspected of having ovarian malignancy? <i>Gynecol Oncol</i> 2011; 122 (1):95-9.	N=7,598 women who received surgery for an adnexal mass, No mean age reported	Centralised and regular care for ovarian malignancy	General gynaecologists in a general hospital Vs gynecological oncologist whether or not in a specialised center Vs systematic diagnostic evaluation prior to surgery	Doctors' cost for diagnosis and surgical treatment, salary costs for gynecological oncologist, costs of chemotherapy	Life years gained
8	Sutton JM, Wilson GC, Paquette IM, et al. Cost effectiveness after a pancreaticoduodenectomy: bolstering the volume argument. <i>HPB (Oxford)</i> 2014; 16 (12):1056-61.	N=9883, >18 years age, undergone pancreaticoduodenectomy, modelled	Pancreatic surgery	Lowest Vs Low Vs Middle Vs High Vs Highest volume hospitals	Total direct costs said to be included- but not clear on cost components	Post-operative death prior to discharge
9	Chan T, Kim J, Minich LL, et al. Surgical Volume, Hospital Quality, and Hospitalization Cost in Congenital Heart Surgery in the United States. <i>Pediatric Cardiology</i> 2015; 36 (1):205-13.	N=24,992, <18 years age, underwent congenital cardiac surgery	Congenital cardiac surgery	High Vs Medium Vs Low volume hospitals	Hospital costs but cost components not clear	Mortality rate, number of complications

10	Hunter RM, Davie C, Rudd A, et al. Impact on Clinical and Cost Outcomes of a Centralized Approach to Acute Stroke Care in London: A Comparative Effectiveness Before and After Model. <i>PLoS ONE</i> 2013; 8 (8):e70420.	N=3463, had ischemic or hemorrhagic stroke, mean age=71-72.8 years, modelled	Acute stroke care	Local hospitals Vs Centralised hyper acute stroke units	Costs of transport, acute hospitalisation, imaging and surgical interventions, staff contacts and medications during acute hospitalisation and post-discharge care	QALYs, deaths averted
11	Tanke MAC, Ikkersheim DE. A new approach to the tradeoff between quality and accessibility of health care. <i>Health Policy</i> 2012; 105 (2-3):282-87.	Women undergoing breast cancer treatment- modelled	Breast cancer care	Local hospitals Vs Centralised hospital	Travel costs for patients that stem from centralisation	QALYs
12	Losina E, Walensky RP, Kessler CL, et al. Cost-effectiveness of total knee arthroplasty in the United States: patient risk and hospital volume. <i>Arch Intern Med</i> 2009; 169 (12):1113-21; discussion 21-2.	N=121,432, >65 years with end stage knee Osteoarthritis, modelled	Total knee arthroplasty(TKA)	Low Vs Medium Vs High volume hospitals	TKA costs-Hospital costs, physician costs, costs of complications, costs of rehabilitation following discharge; Osteoarthritis(OA) cost-Inpatient and ambulatory visits, Knee OA medications, MRIs and radiograms	QALYs
13	Seguin J, Garber BG, Coyle D, et al. An economic evaluation of trauma care in a Canadian lead trauma hospital. <i>J Trauma</i> 1999; 47 (3 Suppl):S99-103.	N=484, median age=39 years, trauma admissions with an Injury Severity Score (ISS)>12	Trauma care	Tertiary trauma care center Vs Non trauma center hospital	Direct costs of treatment (e.g. staff, consumables) and indirect costs(e.g. overheads)- cost	QALYs

					component not clear	
14	MacKenzie EJ, Weir S, Rivara FP, et al. The value of trauma center care. <i>J Trauma</i> 2010; 69 (1):1-10.	N=5043, 18-84 years, treated for a moderately severe to severe injury	Trauma care	Level I trauma center Vs non trauma center hospital	Costs associated with-Index hospitalisation, transport, hospital transfers, re-hospitalisation, inpatient rehabilitation, stays in long term care, nursing facilities, outpatient care, informal care by friends and family	Incremental lives saved, incremental life years gained, incremental QALY gained
15	Tsao SY, Lee WC, Loong CC, et al. High-surgical-volume hospitals associated with better quality and lower cost of kidney transplantation in Taiwan. <i>J Chin Med Assoc</i> 2011; 74 (1):22-7.	N=1060, >18 years of age, patients with kidney transplants	Kidney transplantation	High Vs Low volume hospitals	Total medical cost of the transplant, annual medical cost for 3 years after the transplant	Complications- infection, mortality, readmission in 14 days, patient survival at 1,2, and 3 years of transplantation
16	Yoshioka R, Yasunaga H, Hasegawa K, et al. Impact of hospital volume on hospital mortality, length of stay and total costs after pancreaticoduodenectomy. <i>British Journal of Surgery</i> 2014; 101 (5):523-29.	N=10652, mean age=67.3 years, patients undergoing pancreaticoduodenectomy	Pancreatic surgery	Very high Vs High Vs Medium Vs Low Vs Very low volume hospitals	Costs of surgical, pharmaceutical, laboratory and other inpatient services- but cost components not clear	Post-operative mortality, length of hospital stay
17	Joynt KE, Orav EJ, Jha AK. The association between hospital volume and processes, outcomes, and costs of care for congestive heart failure. <i>Ann Intern Med</i> 2011; 154 (2):94-102.	N=1,029,497, median age=80 years, patients >65 years of age with discharge diagnosis of congestive heart failure	Congestive heart failure care	High Vs Medium Vs Low volume hospitals	No clear information on cost	Mortality, readmission rates

18	Ellison LM, Heaney JA, Birkmeyer JD. The effect of hospital volume on mortality and resource use after radical prostatectomy. <i>J Urol</i> 2000; 163 (3):867-9.	N=66,693 men, mean age= 65 years, patients undergoing radical prostatectomy	Radical prostatectomy	High Vs Low volume hospitals	Hospital charges- but no clear information on cost components	In-hospital mortality, length of hospital stay
19	Nathan H, Atoria CL, Bach PB, et al. Hospital Volume, Complications, and Cost of Cancer Surgery in the Elderly. <i>Journal of Clinical Oncology</i> 2014	N=60,361, >66 years of age, patients diagnosed with cancer of the bladder, colon, lung, pancreas, prostate, or rectum and undergone surgical resection	Cancer surgery- included colectomy, cystectomy, pancreatectomy, proctectomy, prostatectomy, and pulmonary lobectomy	High Vs Mid Vs Low volume hospitals	Medicare payments for diagnosis related group, index hospitalisation and readmissions within 30 days from discharge; home health agencies, rehabilitation hospital, skilled nursing facilities in the corresponding 30 days after discharge. However unit costs of each not presented.	Post-operative patient outcomes- mortality, complications, readmissions, and emergency room visits within 30 days after surgery
20	Sosa JA, Bowman HM, Gordon TA, et al. Importance of hospital volume in the overall management of pancreatic cancer. <i>Ann Surg</i> 1998; 228 (3):429-38.	N=1236, mean age=67 years, patients with pancreatic cancer and undergoing a primary treatment procedure	Palliative procedures and curative surgery for pancreatic cancer	High Vs Medium Vs Low volume hospitals	Hospital charges- but not clear on its components	In-hospital mortality rate, length of hospital stay,
21	Mitsuyasu S, Hagihara A, Horiguchi H, et al. Relationship Between Total Arthroplasty Case Volume and Patient Outcome in an Acute Care Payment System in Japan. <i>The Journal of Arthroplasty</i> 2006; 21 (5):656-63.	N=1561, mean age=69.8 years, patients who had undergone joint arthroplasty	Total Arthroplasty	High Vs Low volume hospitals	Hospital costs- but not clear on its components	Length of hospital stay

22	Swisher SG, Deford L, Merriman KW, et al. Effect of operative volume on morbidity, mortality, and hospital use after esophagectomy for cancer. <i>J Thorac Cardiovasc Surg</i> 2000; 119 (6):1126-32.	N=340, age not specified, patients who underwent esophageal resection for cancer	Esophagectomy	High Vs Low volume; Cancer Specialised Vs Community hospitals	Hospital charge- but not clear on its components	Operative mortality, complications of care
23	Gordon TA, Burleyson GP, Tielsch JM, et al. The effects of regionalization on cost and outcome for one general high-risk surgical procedure. <i>Ann Surg</i> 1995; 221 (1):43-9.	N=502, mean age=62 years, patients undergone pancreaticoduodenectomies	Pancreatic surgery	High volume regional hospital Vs numerous lower-volume hospitals	Hospital charges- but not clear on its components	In-hospital mortality, length of ICU and hospital stay
24	Yu HY, Hevelone ND, Patel S, et al. Hospital surgical volume, utilization, costs and outcomes of retroperitoneal lymph node dissection for testis cancer. <i>Adv Urol</i> 2012; 2012 :189823.	N=993, >18 years of age, undergone retroperitoneal lymph node dissection for testis cancer, mean age=30.9 years	Retroperitoneal lymph node dissection for testis cancer	High Vs Low volume hospitals	Inpatient charges- but not clear on its components	Mortality, Length of hospital stay,
25	Glasgow RE, Mulvihill SJ. Hospital volume influences outcome in patients undergoing pancreatic resection for cancer. <i>West J Med</i> 1996; 165 (5):294-300.	N=1705, median age=65 years (range 2-85 years), patients undergoing pancreatic resection	Pancreatic resection	Comparison of several different volume hospitals	Hospital charges- but not clear on its components	Operative mortality, Length of hospital stay, patient discharged to home
26	Dimick JB, Pronovost PJ, Lipsett PA. The Effect of ICU Physician Staffing and Hospital Volume on Outcomes After Hepatic Resection. <i>Journal of Intensive Care Medicine</i> 2002; 17 (1):41-47.	N=569, >18 years of age, having primary procedure code for hepatectomy; mean age=57 years,	Managing Hepatic resection	ICU physician rounds and no ICU physician rounds in High Vs Low volume hospitals, High Vs Low volume surgeons, (only hospital volume was considered in this review)	Hospital charges- but not clear on its components	In-hospital mortality, length of hospital stay
27	Slover JD, Tosteson AN, Bozic KJ, et al. Impact of hospital volume on the economic value of computer	Hypothetical cohort of 65 year old patients with end-	Computer assisted surgery in end-stage	Conventional total knee replacement without computer	Reimbursement costs of primary and revision total	QALYs, revision rates

	navigation for total knee replacement. <i>J Bone Joint Surg Am</i> 2008; 90 (7):1492-500.	stage arthritis of the knee were modelled.	arthritis of the knee	navigation and computer assisted surgery compared in high vs low volume hospitals	knee replacement and computer navigation including cost of computer software and service contract- no information on breakdown of unit costs and resource consumption	
28	Nguyen NT, Paya M, Stevens CM, et al. The relationship between hospital volume and outcome in bariatric surgery at academic medical centers. <i>Ann Surg</i> 2004; 240 (4):586-93; discussion 93-4.	N=24,166, patients who underwent Roux-en-Y gastric bypass for the treatment of morbid obesity, No age restrictions,	Bariatric surgery	High Vs Medium Vs Low volume hospitals	Not clear- but appears to be cost of surgery	Perioperative outcomes- length of hospital stay, complications, readmissions; In-hospital mortality
29	Vogel TR, Dombrovskiy VY, Graham AM, et al. The impact of hospital volume on the development of infectious complications after elective abdominal aortic surgery in the Medicare population. <i>Vasc Endovascular Surg</i> 2011; 45 (4):317-24.	N=59365 elective aortic surgery procedures, >65 years of age with nonruptured abdominal aortic aneurysms	Elective aortic surgery	High Vs Low volume hospitals	Hospital charges- but not clear on its components	In-hospital mortality, postoperative infectious complications, length of ICU stay, length of hospital stay
30	Ananthkrishnan AN, McGinley EL, Saeian K. Higher hospital volume is associated with lower mortality in acute nonvariceal upper-GI hemorrhage. <i>Gastrointest Endosc</i> 2009; 70 (3):422-32.	N=391,119 discharges with a primary diagnosis of nonvariceal upper-GI hemorrhage, >18 years of age	Treatment of acute nonvariceal upper-GI hemorrhage	High Vs Medium Vs Low volume hospitals	Hospital charges- but components not clear	In-hospital mortality, length of hospital stay
31	Simpson AN, Wardrope J, Burke D. The Sheffield experiment: the effects of centralising accident and emergency services in a large	N=371,293 annual new patient attendances analysed	Centralisation of accident and emergency services	Before centralisation Vs after centralisation	The cost of A&E services as a whole, the cost per case in the A&E; do not include	Quality of patient care in terms of time to see a doctor or nurse practitioner, time to admission

	urban setting. <i>Emergency Medicine Journal</i> 2001; 18 (3):193-97.				capital expenditure generated by building works/equipment costs as a result of centralisation	
32	Shen HN, Lu CL, Li CY. The effect of hospital volume on patient outcomes in severe acute pancreatitis. <i>BMC Gastroenterol</i> 2012; 12 :112.	N=22,551 patients with severe acute pancreatitis, age range (38-73) years	Treatment of severe acute pancreatitis	Comparison of several different volume quartiles	Hospital charges- but components not clear	Hospital mortality, length of hospital stay
33	Singla A, Simons J, Li Y, et al. Admission Volume Determines Outcome for Patients With Acute Pancreatitis. <i>Gastroenterology</i> 2009; 137 (6):1995-2001.	N=416, 489, >18 years of age patients with primary diagnosis of acute pancreatitis, mean age=53 years	Treatment of acute pancreatitis	High Vs Low volume hospitals	Hospital charges- but components not clear	In-hospital mortality, length of hospital stay
34	Koo JJ, Wang J, Thompson CB, et al. Impact of Hospital Volume and Specialization on the Cost of Orbital Trauma Care. <i>Ophthalmology</i> 2013; 120 (12):2741-46.	N=499, patients who underwent orbital reconstruction, mean age=34 years (range 3-94)	Orbital trauma care	Specialised eye trauma center Vs Local hospitals	Hospital charges- but components not clear	Readmission, length of hospital stay
35	Gordon TA, Bowman HM, Bass EB, et al. Complex gastrointestinal surgery: impact of provider experience on clinical and economic outcomes. <i>J Am Coll Surg</i> 1999; 189 (1):46-56.	N=4,561, patients discharged after complex gastrointestinal surgical procedures, mean age=61.6 years	Complex gastrointestinal surgical procedures	High Vs Medium Vs Low volume hospitals	Hospital charges- but components not clear	In-hospital mortality, length of hospital stay
36	Choti MA, Bowman HM, Pitt HA, et al. Should hepatic resections be performed at high-volume referral centers? <i>J Gastrointest Surg</i> 1998; 2 (1):11-20.	N=606, patients undergone hepatic resection, mean age=54.8 years	Hepatic resections	High Vs Low volume hospitals	Hospital charges- but components not clear	In-hospital mortality, length of hospital stay
37	Harmon JW, Tang DG, Gordon TA, et al. Hospital volume can serve as a surrogate for surgeon volume for	N=9739, >18 years of age, patients who underwent	Colorectal resections	High Vs Medium Vs Low volume hospitals and	Hospital charges- but components not clear	In-hospital mortality, length of hospital stay

	achieving excellent outcomes in colorectal resection. <i>Ann Surg</i> 1999; 230 (3):404-11; discussion 11-3.	colorectal section as the primary procedure, mean age=69.2 years		surgeons (but surgeons not included in this review)		
38	Díaz-Montes TP, Zahurak ML, Giuntoli RL, et al. Concentration of uterine cancer surgical care among the elderly: A population-based perspective. <i>Gynecologic Oncology</i> 2007; 107 (3):436-40.	N=6181, >18 years of age women with primary surgical procedure for a malignant uterine neoplasm,	Uterine cancer surgical care	High Vs Low volume hospitals and surgeons (but surgeons not included in this review)	Hospital costs- but components not clear	Peri-operative mortality rates, length of hospital stay, length of ICU stay
39	Wright JD, Hershman DL, Burke WM, et al. Influence of surgical volume on outcome for laparoscopic hysterectomy for endometrial cancer. <i>Ann Surg Oncol</i> 2012; 19 (3):948-58.	N=4,137, women who underwent laparoscopic hysterectomy for endometrial cancer	Laparoscopic hysterectomy	High Vs Intermediate Vs Low volume hospitals and surgeons (but surgeons not included in this review)	Hospital costs-but components not clear	Perioperative morbidity and mortality, length of hospital stay, readmissions within 60 days
40	Diaz-Montes TP, Giuntoli RL. Volume-Based Care among Young Women Diagnosed with Uterine Cancer. <i>ISRN Surg</i> 2011; 2011 :541461.	N=6,181, >18 years of age women with primary surgical procedure for a malignant uterine neoplasm	Caring uterine cancer	High Vs Low volume hospitals and surgeons (but surgeons not included in this review)	Hospital costs- but components not clear	Length of hospital stay, length of ICU stay, in-hospital mortality
41	Lee JA, Park JH, Lee EJ, et al. High-quality, low-cost gastrectomy care at high-volume hospitals: results from a population-based study in South Korea. <i>Arch Surg</i> 2011; 146 (8):930-6.	N=48,938, patient undergoing gastrectomy, mean age=58 years	Gastrectomy care	Very high Vs high Vs Very low Vs Low volume hospitals	Hospital costs-but components not clear	Length of hospital stay, standard mortality ratio
42	Tsugawa Y, Kumamaru H, Yasunaga H, et al. The association of hospital volume with mortality and costs of care for stroke in Japan. <i>Med Care</i> 2013; 51 (9):782-8.	N=66,406, primary admission diagnosis of stroke,	Stroke care	High Vs Medium Vs Low volume hospitals	Total costs of hospital care- costs components broken down into: costs of oral medications, injectables, surgical and non-	In-hospital mortality

					surgical procedures, tests, imaging studies	
43	Chiu CC, Wang JJ, Tsai TC, et al. The relationship between volume and outcome after bariatric surgery: a nationwide study in Taiwan. <i>Obes Surg</i> 2012; 22 (7):1008-15.	N=2,674, >18 years of age patients who had undergone bariatric surgery, mean age=32.21 years	Bariatric surgery	High Vs Low volume hospitals and surgeons (but surgeons not included in this review)	Hospital treatment cost-but components not clear	Length of hospital stay
44	Safford SD, Pietrobon R, Safford KM, et al. A study of 11,003 patients with hypertrophic pyloric stenosis and the association between surgeon and hospital volume and outcomes. <i>J Pediatr Surg</i> 2005; 40 (6):967-72; discussion 72-3.	N=11,003, children with hypertrophic pyloric stenosis, mean age=41.1 days	Hypertrophic pyloric stenosis surgery	High Vs Medium Vs Low volume hospitals and surgeons (but surgeons not included in this review)	Cost components not clear	Length of hospital stay, complications, mortality
45	Long DM, Gordon T, Bowman H, et al. Outcome and cost of craniotomy performed to treat tumors in regional academic referral centers. <i>Neurosurgery</i> 2003; 52 (5):1056-63; discussion 63-5.	N= 4,723, patient undergoing a craniotomy for a benign tumor, primary or secondary malignant neoplasm, mean age=54.5 years	Craniotomy	High Vs Low volume hospitals	Hospitals charges-but components not clear	In-hospital mortality, length of hospital stay
46	Clement RC, Carr BG, Kallan MJ, et al. Volume-outcome relationship in neurotrauma care. <i>J Neurosurg</i> 2013; 118 (3):687-93.	N=61,067, patient with neurological trauma	Neurotrauma care	Several different volume hospitals	Hospital costs-but components not clear	Mortality, length of hospital stay, poor outcomes (not clearly defined)
47	Hamada T, Yasunaga H, Nakai Y, et al. Impact of hospital volume on outcomes in acute pancreatitis: a study using a nationwide administrative database. <i>J Gastroenterol</i> 2014; 49 (1):148-55.	N=17,415, >20 years age patients with acute pancreatitis, mean age=61.1 years	Acute pancreatitis care	High Vs Low volume hospitals	Hospital costs-reported the inclusion of item by item price for surgical, pharmaceutical, laboratory and other inpatient	In-hospital mortality, length of hospital stay

					services, however cost details not provided	
48	Gutierrez B, Culler SD, Freund DA. Does hospital procedure-specific volume affect treatment costs? A national study of knee replacement surgery. <i>Health Serv Res</i> 1998; 33 (3 Pt 1):489-511.	N=67,041 patient hospitalisation in which knee replacement surgery had been performed, mean age=74 years	Knee replacement surgery	High Vs Medium Vs Low volume hospitals	Hospital costs-but components not clear	Mortality, complications
49	Auerbach AD, Hilton JF, Maselli J, et al. Case volume, quality of care, and care efficiency in coronary artery bypass surgery. <i>Arch Intern Med</i> 2010; 170 (14):1202-8.	N=81,289 patients who underwent coronary artery bypass surgery, mean age=65 years	Coronary artery bypass surgery	Several volume quartiles hospitals and surgeons (but surgeons not included in this review)	Hospital costs-but components not clear	Length of hospital stay, care quality
50	Gourin CG, Forastiere AA, Sanguineti G, et al. Impact of surgeon and hospital volume on short-term outcomes and cost of oropharyngeal cancer surgical care. <i>Laryngoscope</i> 2011; 121 (4):746-52.	N=1,534, >18 years of age patients with a diagnosis of oropharyngeal cancer, mean age=58.3 years	Oropharyngeal cancer surgical care	High Vs low volume hospitals and surgeons (but surgeons not included in this review)	Hospital costs-but components not clear	In-hospital mortality, length of hospital stay, readmissions
51	Lu CC, Chiu CC, Wang JJ, et al. Volume-outcome associations after major hepatectomy for hepatocellular carcinoma: a nationwide Taiwan study. <i>J Gastrointest Surg</i> 2014; 18 (6):1138-45.	N=23,107, patients undergone major hepatectomy for hepatocellular carcinoma, mean age=58.1 years	Major Hepatectomy	High Vs Low volume hospitals and surgeons (but surgeons not included in this review)	Hospital costs-reported inclusion of cost of operating room, radiology, physical therapy, hospital room, anesthetist, pharmacy, laboratory, special materials, surgeon and others, however cost details not provided	Length of hospital stay, survival
52	Macomber CW, Shaw JJ, Santry H, et al. Centre volume and resource consumption in liver	N=5310, patients who underwent liver	Liver transplantation	High Vs Medium Vs Low volume hospitals	Reported as directed costs of transplant-but cost	Mortality, Transplant to length of hospital

	transplantation. <i>HPB (Oxford)</i> 2012; 14 (8):554-9.	transplants, age range:18-81 years			components not clear	stay, ICU length of stay
53	Kuo EY, Chang Y, Wright CD. Impact of hospital volume on clinical and economic outcomes for esophagectomy. <i>Ann Thorac Surg</i> 2001; 72 (4):1118-24.	N=1,193, patients who underwent esophagectomy, mean age=64.3 years	Esophagectomy	High Vs Low volume hospitals	Hospital costs-but components not clear	Length of hospital stay, length of ICU stay, In-hospital mortality, discharge destination
54	Bristow RE, Santillan A, Diaz-Montes TP, et al. Centralisation of care for patients with advanced-stage ovarian cancer: a cost-effectiveness analysis. <i>Cancer</i> 2007; 109 (8):1513-22.	Hypothetical cohort of women with advanced-stage ovarian cancer-modelled	Advanced-stage ovarian cancer care	Expert center Vs Less experienced center	Direct costs-costs of primary surgery, chemotherapy regimens, hospitalisation costs for treatment related toxicity Indirect costs- cost of lost productivity, care giver support. Cost components clearly stated.	QALYs
55	Greving JP, Vernooij F, Heintz AP, et al. Is centralisation of ovarian cancer care warranted? A cost-effectiveness analysis. <i>Gynecol Oncol</i> 2009; 113 (1):68-74.	N=879 ,Hypothetical cohort of women with ovarian cancer and a mean age of 63 years	Ovarian cancer care	General Vs Semi-specialised Vs Tertiary hospitals	Direct costs and included- personnel costs, operating room costs, costs of follow up monitoring and treatment. Indirect costs were not included.	QALYs, overall survival
56	Fader DJ, Wise CG, Normolle DP, et al. The multidisciplinary melanoma clinic: a cost outcomes analysis of specialty care. <i>J Am Acad Dermatol</i> 1998; 38 (5 Pt 1):742-51.	N=208 for cost analysis, N=954 for long term survival, patients with melanoma (study suffers from a fragmented effectiveness analyses)	Melanoma care	All treatment at Multi-disciplinary Melanoma Clinic Vs Traditional strategy of treating patients referred by physicians for second opinion	Direct costs- costs of office visits/consultations, surgeries, radiology, medical tests, laboratories, pathology, facility and anesthesia included. Indirect	Short term outcomes- surgical morbidity, length of hospital stay Long term outcomes – 5 year survival

					costs were not considered.	
57	Regenbogen SE, Gust C, Birkmeyer JD. Hospital Surgical Volume and Cost of Inpatient Surgery in the Elderly. <i>Journal of the American College of Surgeons</i> 2012; 215 (6):758-65.	N=101,349, Patients undergoing coronary artery bypass grafting, elective abdominal aortic aneurysm, or colectomy; older than 65 years and younger than 99 years of age; mean age=78.4 years	Inpatient operations for colectomy, coronary artery bypass grafting and elective abdominal aortic aneurysm	Several volume quintiles hospitals	Hospital costs- included costs of index hospitalization, readmissions, physician services, post-discharge ancillary care	Complication, mortality
58	Avritscher EB, Cooksley CD, Rolston KV, et al. Serious postoperative infections following resection of common solid tumors: outcomes, costs, and impact of hospital surgical volume. <i>Support Care Cancer</i> 2014; 22 (2):527-35.	N=37,582, >75 years of age patients who underwent resection of cancer of the lung, esophagus, stomach, pancreas, colon, or rectum;	Resection of common surgical tumors	High Vs Intermediate Vs Low volume hospitals	Hospital costs-but cost components not clear	Serious postoperative infection, length of hospital stay, In-hospital mortality
59	Kilic A, Shah AS, Conte JV, et al. Operative outcomes in mitral valve surgery: Combined effect of surgeon and hospital volume in a population-based analysis. <i>The Journal of Thoracic and Cardiovascular Surgery</i> 2013; 146 (3):638-46.	N=50,152, patients undergoing isolated mitral valve surgery for mitral regurgitation, mean age=61.9 years	Mitral valve surgery	High Vs Intermediate Vs Low volume hospitals and surgeons (surgeons not included in this review)	Hospital costs- but cost components not clear	Operative mortality, mitral valve repair rate
60	Sutton JM, Hoehn RS, Ertel AE, et al. Cost-Effectiveness in Hepatic Lobectomy: the Effect of Case Volume on Mortality, Readmission, and Cost of Care. <i>Journal of Gastrointestinal Surgery</i> 2015; 20 (2):253-61.	N= 4163, >18 years of age patients who underwent hepatic lobectomy, mean age= 58 years,	Hepatic lobectomy	High Vs Medium Vs Low volume hospitals	Hospital costs- but components not clear	Peri-operative mortality, Readmissions

61	Kim A, Yoon SJ, Kim YA, et al. The burden of acute myocardial infarction after a regional cardiovascular center project in Korea. <i>Int J Qual Health Care</i> 2015; 27 (5):349-55.	N=1469 in each of the two regions, >18 years age patients with acute myocardial infarction	Acute myocardial infarction care	Before regionalisation Vs After regionalisation	Hospital costs-but components not clear	Length of stay
62	Arora S, Panaich SS, Patel N, et al. Impact of Hospital Volume on Outcomes of Lower Extremity Endovascular Interventions (Insights from the Nationwide Inpatient Sample [2006 to 2011]). <i>The American Journal of Cardiology</i> 2015; 116 (5):791-800.	N=92,714, >18 years of age patients undergoing peripheral endovascular interventions	Peripheral endovascular interventions	Several volume quartiles hospitals	Hospital costs-but components not clear	In-hospital mortality and peri-procedural complications
63	Wakeam E, Hyder JA, Lipsitz SR, et al. Outcomes and Costs for Major Lung Resection in the United States: Which Patients Benefit Most From High-Volume Referral? <i>The Annals of Thoracic Surgery</i> 2015; 100 (3):939-46.	N= 37,746, >18 years of age patients who underwent a major lung resection	Major lung resection	Very high Vs High Vs Moderate Vs Low volume hospitals according to risk groups	Inpatient costs- but components not clear	In-hospital mortality
64	Bhatt P, Patel NJ, Patel A, et al. Impact of Hospital Volume on Outcomes of Endovascular Stenting for Adult Aortic Coarctation. <i>The American Journal of Cardiology</i> 2015; 116 (9):1418-24.	N=105, >18 years of age patients with coarctation of aorta, mean age= 36.9 years,	Treatment of coarctation of aorta	High Vs Low volume hospitals	Hospital costs- but components not clear	Length of stay, complications

QALYs= Quality Adjusted Life Years; ICU= Intensive Care Unit