Clinical Policy Title: Endovascular repair of abdominal aortic aneurysm

Clinical Policy Number: 08.03.05

Effective Date: July 1, 2017
Initial Review Date: June 22, 2017
Most Recent Review Date: June 22, 2017
Next Review Date: June 2018

Policy contains:
- Endovascular repair
- Endovascular graft
- Abdominal aortic aneurysm

Related policies:
None.

ABOUT THIS POLICY: AmeriHealth Caritas Louisiana has developed clinical policies to assist with making coverage determinations. AmeriHealth Caritas Louisiana’s clinical policies are based on guidelines from established industry sources, such as the Centers for Medicare & Medicaid Services (CMS), state regulatory agencies, the American Medical Association (AMA), medical specialty professional societies, and peer-reviewed professional literature. These clinical policies along with other sources, such as plan benefits and state and federal laws and regulatory requirements, including any state- or plan-specific definition of “medically necessary,” and the specific facts of the particular situation are considered by AmeriHealth Caritas Louisiana when making coverage determinations. In the event of conflict between this clinical policy and plan benefits and/or state or federal laws and/or regulatory requirements, the plan benefits and/or state and federal laws and/or regulatory requirements shall control. AmeriHealth Caritas Louisiana’s clinical policies are for informational purposes only and not intended as medical advice or to direct treatment. Physicians and other health care providers are solely responsible for the treatment decisions for their patients. AmeriHealth Caritas Louisiana’s clinical policies are reflective of evidence-based medicine at the time of review. As medical science evolves, AmeriHealth Caritas Louisiana will update its clinical policies as necessary. AmeriHealth Caritas Louisiana’s clinical policies are not guarantees of payment.

Coverage policy

AmeriHealth Caritas Louisiana considers the use of endovascular aneurysm repair (EVAR) of abdominal aortic aneurysm (AAA) to be clinically proven and, therefore, medically necessary when:

- The aneurysm’s absolute size is >5.5 cm.
- The aneurysm’s absolute size rate of change is >1 cm/year.
- There are signs indicating impending rupture (e.g., retroperitoneal pain).
- The patient’s health status precludes medical or open surgical intervention.
- The patient’s comorbid health diagnosis or diagnoses preclude(s) medical or open surgical intervention.

Alternative covered services:

- Open abdominal aortic aneurysmectomy
- Medical management of aneurysm
Background

AAA is a condition that has traditionally been treated with open surgical intervention. Over the last two decades an alternative, less invasive endovascular approach has emerged as treatment for AAA. It is estimated that EVAR is a suitable option for treatment of AAA in 70 percent to 100 percent of patients (Weicker 2016). Consequently, open surgical aneurysm repair (OSAR) of AAA is performed less frequently and is considered appropriate in an ever-smaller segment of patients suffering AAA.

In general, endovascular repair of AAA is contra-indicated and open repair is favored when the following anatomic conditions are present (van Bocheve 2016):

- Unfavorable anatomical concerns (e.g., very short infra-renal neck or excessive neck angulation).
- Presence of additional iliac aneurysms, aortoiliac occlusive disease or renal artery anomalies.
- Failed previous EVAR.

Searches

AmeriHealth Caritas Louisiana searched PubMed and the databases of:

- UK National Health Services Center for Reviews and Dissemination.
- Agency for Healthcare Research and Quality’s National Guideline Clearinghouse and other evidence-based practice centers.
- The Centers for Medicare & Medicaid Services (CMS).

We conducted searches on May 30, 2017. Searched terms were: "endovascular (MeSH)" ,"aorta (MeSH)" and "aneurysm."

We included:

- **Systematic reviews**, which pool results from multiple studies to achieve larger sample sizes and greater precision of effect estimation than in smaller primary studies. Systematic reviews use predetermined transparent methods to minimize bias, effectively treating the review as a scientific endeavor, and are thus rated highest in evidence-grading hierarchies.
- **Guidelines based on systematic reviews.**
- **Economic analyses**, such as cost-effectiveness, and benefit or utility studies (but not simple cost studies), reporting both costs and outcomes — sometimes referred to as efficiency studies — which also rank near the top of evidence hierarchies.

Findings

The debate surrounding endovascular repair is in the main one of patient selection: who benefits most
from the minimally-invasive technique versus open surgery, and what criteria are appropriate to discern who fits into which therapeutic group (DuBois 2015, Luebke 2015). There is substantial medical evidence that endovascular repair is impactful in favorably influencing treatment outcomes for AAA, including those aneurysms which extend into the thorax (Biancari 2016, Melissano 2017). EVAR for ruptured AAA (rAAA) has shown mortality benefits (i.e., fewer reoperative interventions) over OSAR as well as reduced intensive care unit (ICU) stays and total length of stay (LOS) (Zhang 2016, Li 2016, Badger 2016, Portelli 2016, Williams 2017, Hynes 2017). On the other hand, long-term benefits of EVAR versus OSAR have been questioned (Takagi 2016, Takagi 2017, Powell 2017, von Allmen 2017).

Summary of clinical evidence:

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| Li (2016)      | Endovascular versus open surgery repair of ruptured abdominal aortic aneurysms in hemodynamically unstable patients: literature review and meta-analysis. | Key points:  
  - Systematic review (n= 1,784) to evaluate the effect of EVAR in rAAA  
  - The better outcome achieved by EVAR might derive from the fact that patients with hemodynamic instability preferentially underwent open repair.  
  - Perioperative mortality occurred in 27.3% of the patients treated with EVAR and in 38.1% of the patients who underwent open repair.  
  - Subgroup analysis revealed consistent results in favor of EVAR in single-center, observational studies.  
  - Subgroup analysis and meta-regression analysis indicated that the superior effect of EVAR might be associated with more anatomically suitable patients in EVAR group. |
| Portelli (2016) | Endovascular repair for ruptured abdominal aortic aneurysms has improved outcomes compared to open surgical repair. | Key points:  
  - Retrospective review (8480 patients) compared nationwide outcomes for patients who received either EVAR or OSAR for rAAA.  
  - Primary outcomes included mortality, postoperative complications, and readmission rates. Secondary outcomes included hospital resource utilization and LOS.  
  - On multivariate regression, the likelihood of dying in the hospital after OSAR compared to EVAR was significantly greater (odds ratio [OR] = 1.95; 95% confidence interval [CI] = 1.74-2.18).  
  - There was significantly greater frequency of postoperative complications after OSAR compared to EVAR (OR = 2.1, 95%CI = 1.86-2.37, P < .0001).  
  - Freedom from readmission after OSAR was significantly greater than that after EVAR.  
  - Total hospital cost for all services after EVAR was greater than that after OSAR (US$100 875 vs US$89 035; P < .0001), but ICU cost for EVAR was significantly less than that for OSAR (US$5516 vs US$8600; P < .0001).  
  - Total hospital and ICU LOS were shorter in EVAR compared to OSAR (P < .0001 for both). |
| Saedon (2015)   | Outcome of open versus endovascular abdominal aortic aneurysm repair in | Key points:  
  - Systemic review and meta-analysis on 30-day postoperative mortality and complication rate between OSAR and EVAR AAA repair in obese patients.  
  - Four studies were included in the final analyses, all of which were observational in nature. |
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| Obese patients: a systemic review and meta-analysis aortic aneurysms. | • There was no evidence of publication bias as suggested by funnel plots of the outcomes.  
• Meta-analysis showed statistically significant fewer 30-day postoperative mortality in favor of EVAR (risk ratio 0.34 [95% confidence interval 0.25, 0.48], 4 studies, 2440 patients) and early postoperative complications: myocardial infarction (0.29 [0.13, 0.64]), chest infection (0.21 [0.12, 0.38]), renal failure (0.24 [0.11, 0.51]), wound infection (0.59 [0.48, 0.74]).  
• Risk of postoperative bowel ischemia (0.26 [0.06, 1.13]) and stroke (0.32 [0.07, 1.55]) were equivocal between EVAR and OAR. |
| Dubois (2015) | **Key points:**  
• During the last decade, new information and reports have been published regularly describing endovascular and open repair of ruptured abdominal aortic aneurysms, but despite this, disagreement persists over which therapy is best.  
• At the root of the problem is the discrepancy between the findings of multiple well-performed observational studies and a smaller number of randomized controlled trials. |
| Luebke (2015) | **Key points:**  
• Meta-analysis inclusive of 81,681 patients investigated the impact of hemodynamic instability and other potential risk factors on 30-day mortality of EVAR versus open repair for rAAA.  
• All types of comparative studies, including prospective or retrospective, observational studies, or randomized controlled trials (RCTs), were included.  
• 13,706 underwent EVAR and the remaining 67,975 had an open repair of rAAA.  
• Without correction for hemodynamic instability, patients undergoing EVAR had a significantly lower 30-day mortality rate than patients having open repair (OR, 0.512; 95% confidence interval [CI], 0.457-0.574; P <0.01).  
• Moderate heterogeneity among the studies was identified (I(2) = 53.303%), and the likelihood of publication bias was low (P = 0.183).  
• In the RCTs alone (3 studies), patients undergoing EVAR had no significantly lower 30-day mortality rate than patients with open repair (OR, 0.930; 95% CI, 0.691-1.253; P < 0.633).  
• In all studies available, after adjustment for patients' hemodynamic condition at presentation to the hospital, the OR for 30-day mortality was 0.872 (95% CI,0.598-1.270; P = 0.474), as well, indicating no significant difference between the 2 therapeutic options. |
| Takagi (2017) | **Key points:**  
• Systematic review inclusive of 92,333 patients assessed EVAR versus OSR for intact AAA.  
• Pooled survival rates after EVAR and OSR were 98.1% and 96.1 at 1month, 94.2% and 93.1% at 1year, 85.1% and 86.8% at 3years, and 75.8% and 78.8% at 5years, respectively.  
• The survival curves crossed at 1.8years with the survival rate of 90.5%.  
• A pooled late-phase (between 1.8years and 5years) HR for calculated from data of the
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<td>Melissano (2017)</td>
<td><strong>Key points:</strong></td>
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| Treatment of acute thoracoabdominal aortic aneurysms. | - Systematic review (n=671) of patients who underwent open repair versus treatment with endovascular techniques (n=26).  
- Contained rupture (56.98%) was the most common clinical presentation of acute thoraco-abdominal aortic aneurysm (aTAAA)  
- Operative mortality ranged from 11.7% to 27.4%.  
- The overall 30-days survival rate ranged from 73.5% to 87.5%.  
- At 5-year and 10-years, survival rate was 48% and 35%, respectively.  |
| Williams (2017)       | **Key points:**                                                                                                                                                                                                                     |
| Effectiveness of open versus endovascular abdominal aortic aneurysm repair in population settings: A systematic review of statewide databases. | - A systematic review of population-based outcomes after EVAR versus OSAR using statewide inpatient databases.  
- A lower mortality was associated with EVAR extended from the perioperative period up to 3 years after operation, as well as a higher complication rate after EVAR.  
- The evidence from statewide inpatient database analyses confirms short- and long-term mortality outcomes obtained from large, randomized, controlled trials.  |
| Benson (2017)         | **Key points:**                                                                                                                                                                                                                     |
| A systematic review of postoperative cognitive decline following open and endovascular aortic aneurysm surgery. | - A systematic review evaluated evidence for postoperative cognitive decline (POCD) following abdominal and thoracic aortic surgery  
- In those studies that identified evidence of decline, risk was linked to age over 65 years, presence of postoperative delirium and decreased years in education.  
- The authors concluded that POCD can affect patients following major aortic, non-cardiothoracic and cardiothoracic surgery.  |
| Powell (2017)         | **Key points:**                                                                                                                                                                                                                     |
| Meta-analysis of individual-patient data from EVAR-1, DREAM, OVER and ACE trials comparing outcomes of endovascular or open repair for abdominal aortic aneurysm over 5 years. | - A systematic review inclusive of 2,783 patients, with 14,245 person-years of follow-up (median 5·5 years) sought to understand the diminishing success rates of EVAR with time compared with open repair of abdominal aortic aneurysm.  
- Early (0-6 months after randomization) mortality was lower in the EVAR groups (46 of 1,393 versus 73 of 1,390 deaths; pooled hazard ratio 0·61, 95 per cent C.I. 0·42 to 0·89; P = 0·010), primarily because 30-day operative mortality was lower in the EVAR groups (16 deaths versus 40 for open repair; pooled odds ratio 0·40, 95 per cent C.I. 0·22 to 0·74).  
- Later (within 3 years) the survival curves converged, remaining converged to 8 years.  
- Beyond 3 years, aneurysm-related mortality was significantly higher in the EVAR groups (19 deaths versus 3 for open repair; pooled hazard ratio 5·16, 1·49 to 17·89; P =0·010).  
- Patients with moderate renal dysfunction or previous coronary artery disease had no early survival advantage under EVAR.  |
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<td>von Allmen (2017)</td>
<td><strong>Key points:</strong>&lt;br&gt;- Those with peripheral artery disease had lower mortality under open repair (39 deaths versus 62 for EVAR; P = 0·022) in the period from 6 months to 4 years after randomization.</td>
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| Incidence of stroke     | **Key points:**<br>- A systematic review examined the increased incident of stroke in patients following thoracic endovascular aortic repair (TEVAR) and assessed the impact of left subclavian artery (LSA) coverage on stroke incidence.  
- The included studies enrolled a total of 2594 persons (61% male) between 1997 and 2014 with a mean weighted age of 71.8 (95% CI 71.1-73.6) years.  
- The pooled prevalence for stroke was 4.1% (95% CI 2.9-5.5) with moderate heterogeneity between studies (I(2) = 49.8%, p = .04).  
- Five studies reported stroke incidences stratified by the management of the LSA, that is uncovered versus covered and revascularized versus covered and not-revascularized.  
- In cases where the LSA remained uncovered, the pooled stroke incidence was 3.2% (95% CI 1.0-6.5).  
- There was, however, an indication that stroke incidence increased following LSA coverage, to 5.3% (95% CI 2.6-8.6) in those with a revascularization and 8.0% (95% CI 4.1-12.9) in those without revascularization.                                                                                                                                                                                                                                                                                                                                                               |
| following thoracic       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| endovascular aortic      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| repair for descending    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| aortic aneurysm: a       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| systematic review of     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| the literature with      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| meta-analysis.           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Hynes (2017)             | **Key points:**<br>- A retrospective study compared reoperation rates associated with open AAA repair vs EVAR.  
- The primary outcome was the incidence of reoperations.  
- Reoperations included subsequent open or EVAR procedures performed on the abdominal aorta or iliac arteries, surgical treatment of temporally related bowel obstruction, as well as treatment of abdominal or groin wound complications ≤6 months and treatment of bowel or lower limb ischemia ≤10 days.  
- Of 6,677 patients who underwent AAA repair, 476 (7.1%) required reoperations.  
- Open AAA repair was associated with a higher rate of reoperations overall (10.0% vs 6.3%; P < .01), with most being intra-abdominal and wound complications.  
- Open AAA repair also had higher rates of bowel ischemia requiring operation (0.7% vs 0.3%; P =.01) and lower extremity ischemia (0.5% and 0.06%; P < .01).  
- Significantly more endovascular stents were placed during EVAR (2.8% vs 0.5%; P < .01). Logistic regression showed EVAR is a negative predictor for reoperation after controlling for comorbidities (P < .001).                                                                                                                                                                                                                                                                                                                                 |
| Reoperation rates        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| after open and           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| endovascular abdominal   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| aortic aneurysm repairs. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Takagi (2016)            | **Key points:**<br>- Meta-analysis sought to determine whether EVAR reduces perioperative mortality and improves overall survival compared with OSR in patients with rAAA.  
- Twenty-four adjusted observational studies and 4 RCTs enrolling a total of 56,826 patients with RAAA were identified and included.  
- For perioperative all-cause mortality, pooled analyses of 22 adjusted observational studies and 4 RCTs respectively demonstrated a statistically significant 49% reduction with EVAR relative to OSR (odds ratio [OR]=0.51; 95% confidence interval [CI]: 0.44 to 0.59; P<0.00001) and no statistically significant difference between EVAR and OSR.                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| A meta-analysis of       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| adjusted observational    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| studies and randomized   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| controlled trials of     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| endovascular versus      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| open surgical repair for  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| ruptured abdominal aortic|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
Citation | Content, Methods, Recommendations
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aneurysm. | (OR=0.91; 95% CI: 0.68 to 1.22; P=0.53) (P for subgroup differences = 0.0006).  
- For overall (3 months to 8 years) all-cause mortality, a pooled analysis of 7 adjusted observational studies (hazard ratio [HR]=0.92; 95% CI: 0.77 to 1.10; P=0.37) and 3 RCTs (HR=0.89; 95% CI: 0.69 to 1.14; P=0.34) demonstrated no statistically significant difference between EVAR and OSR (P for subgroup differences = 0.81).  
- The authors concluded that in patients with rAAA, EVAR is likely effective in prevention of perioperative overall (3 months to 8 years), but not all-cause mortality.

Spanos (2016) | Key points:  
Systematic review of follow up compliance after endovascular abdominal aortic aneurysm repair. |  
- Systematic review studied whether lifelong surveillance after EVAR is effective to monitor the effectiveness and durability of the treatment.  
- The studies included 36,119 patients with mean age of 76±3.1 years under mean follow-up ranging from 25 to 73 months.  
- Incomplete follow-up and complete loss of follow-up ranged from 15% to 65%.  
- Five studies suggested that complete follow-up did not offer any survival benefit, while only one study suggested that incomplete follow-up was associated with higher fatal complication rates.  
- The authors concluded there is lack of solid evidence to show that poor compliance results in worse outcomes.

Zhang (2016) | Key points:  
Open surgery versus endovascular aneurysm repair for hemodynamically stable and unstable ruptured abdominal aortic aneurysm. |  
- Systematic review aimed to compare the outcomes of EVAR and open surgery in hemodynamically stable and unstable rAAA patients.  
- The review included 48 articles that reported the treatment outcomes of rAAA managed with EVAR (n = 9,610) and open surgery (n = 93,867).  
- A sub-study within the review focused on 5 articles, which further reported treatment results in hemodynamically stable (n = 198) and hemodynamically unstable (n = 185) patients.  
- In-hospital mortality rate was found to be lower in the EVAR group than in the open group (29.9 vs 40.8 %; OR 0.59; 95 % CI 0.52-0.66; P < 0.01).  
- In the sub-study, 383 (152 patients treated by EVAR, 231 treated by open surgery) found total mortality was 147/383 (38.4 %), while the mortality of the EVAR group and the open surgery group was 25.7 % (39/152) and 46.8 % (108/231), respectively.  
- In the hemodynamically stable group, the in-hospital mortality after EVAR was significantly lower than that after open surgery [18.9 % (18/95) vs 28.2 % (29/103); OR 0.47; 95 % CI 0.22-0.97; P = 0.04].  
- For the hemodynamically unstable rAAA patients, the in-hospital mortality after EVAR was significantly lower than that after open surgery [36.8 % (21/57) vs 61.7 % (79/128); OR 0.40; 95 % CI 0.20-0.79;P < 0.01].  
- The authors concluded that EVAR in hemodynamically unstable rAAA patients is associated with improved outcomes when compared to open surgery.

Biancari (2016) | Key points:  
Endovascular treatment of degenerative aneurysms involving |  
- A systematic review and meta-analysis sought to determine the efficacy of thoracic endovascular aortic repair (TEVAR) for degenerative aneurysm involving only the descending thoracic aorta (DTAA).
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| only the descending thoracic aorta: systematic review and meta-analysis. | • The main endpoints of the analysis were all-cause 30-day and late postoperative mortality. Secondary outcome measures were procedure success, vascular access complications, paraplegia, stroke, early endoleaks during the index hospitalization, aneurysm-related death, reinterventions, and conversion to open repair.  
  • Eleven studies reporting on 673 patients (mean age 72.6 years, mean aneurysm diameter 62.9 mm) with DTAA were selected for the analysis.  
  • Technical success was reported in 91.0% of patients, and vascular access complications requiring repair were encountered in 9.7% of cases.  
  • Pooled overall 30-day, 1-year, 2-year, and 3-year survival rates were 96.0%, 80.3%, 77.3%, and 74.0%, respectively.  
  • Five studies compared the results of TEVAR after elective (n=151) and urgent/emergent procedure (n=77); the latter was a predictor of 30-day mortality (17.1% vs 1.8%, RR 3.83, 95% CI 1.18 to 12.40, p=0.025).  
  • Paraplegia occurred in 3.2% of patients and was permanent in 1.4% of patients. The stroke rate was 2.7%.  
  • The mean follow-up of 9 studies was 22.3 months.  
  • At 3 years, freedom from reintervention was 90.3%.  
  • Death secondary to aneurysm rupture and/or fistula was reported in 3.2% of patients. |
| Badger (2016) Endovascular repair or open repair for ruptured abdominal aortic aneurysm: a Cochrane systematic review. | Key points:  
  • The study aim was to compare the outcomes for eEVAR with conventional open surgical repair for the treatment of rAAA.  
  • 3 RCTs were included, with a total of 761 patients with rAAA.  
  • Meta-analysis was performed with fixed-effects models with ORs and 95% CIs for dichotomous data and mean differences with 95% CIs for continuous data.  
  • Primary outcome was short-term mortality.  
  • Secondary outcome measures included aneurysm-specific and general complication rates, quality of life and economic analysis.  
  • Overall risk of bias was low. There was no difference between the 2 interventions on 30-day (or in-hospital) mortality, OR 0.91 (95% CI 0.67 to 1.22; p=0.52). 30-day complications included myocardial infarction, stroke, composite cardiac complications, renal complications, severe bowel ischemia, spinal cord ischemia, reoperation, amputation and respiratory failure.  
  • Reporting was incomplete, and no robust conclusion was drawn.  
  • For complication outcomes that did include at least 2 studies in the meta-analysis, there was no clear evidence to support a difference between EVAR and open repair.  
  • Longer term outcomes and cost per patient were evaluated in only a single study, thus precluding definite conclusions. |
| Portelli (2016) Endovascular repair for ruptured abdominal aortic aneurysms has improved outcomes compared to open | Key points:  
  • A retrospective analysis of the Medicare Provider Analysis and Review file from 2005 to 2009 was used to identify patients diagnosed with rAAA and treated with either EVAR or OSAR.  
  • Primary outcomes included mortality, postoperative complications, and readmission rates. Secondary outcomes included hospital resource utilization and length of stay (LOS). |
A total of 8480 patients with rAAA who underwent EVAR (n = 1939) or OSAR (n = 6541) were identified. On multivariate regression, the likelihood of dying in the hospital after OSAR compared to EVAR was significantly greater (odds ratio [OR] = 1.95; 95% confidence interval [CI] = 1.74-2.18). There was significantly greater frequency of postoperative complications after OSAR compared to EVAR (OR = 2.1, 95%CI = 1.86-2.37, P < .0001). Freedom from readmission after OSAR was significantly greater than that after EVAR. Total hospital cost for all services after EVAR was greater than that after OSAR (US$100 875 vs US$89 035; P < .0001), but intensive care unit (ICU) cost for EVAR was significantly less than that for OSAR (US$5516 vs US$8600; P < .0001). Total hospital and ICU LOS were shorter in EVAR compared to OSAR (P < .0001 for both).

References

Professional society guidelines/other:


Peer-reviewed references:


Wieker CM, Spazier M, Böckler D. Indications for and outcome of open AAA repair in the endovascular


**CMS National Coverage Determination (NCDs):**


**Local Coverage Determinations (LCDs):**

No LCDs identified as of the writing of this policy.

**Commonly submitted codes**

Below are the most commonly submitted codes for the service(s)/item(s) subject to this policy. This is not an exhaustive list of codes. Providers are expected to consult the appropriate coding manuals and bill in accordance with those manuals.

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<tr>
<th>CPT Code</th>
<th>Description</th>
<th>Comments</th>
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<tr>
<td>75952</td>
<td>Endovascular repair of infrarenal abdominal aortic aneurysm or dissection, radiological supervision and interpretation</td>
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<tr>
<td>34825</td>
<td>Placement of proximal or distal extension prosthesis for endovascular repair of infrarenal abdominal aortic or iliac aneurysm, false aneurysm, or dissection; initial vessel</td>
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<tr>
<td>34804</td>
<td>Endovascular repair of infrarenal abdominal aortic aneurysm or dissection; using unibody bifurcated prosthesis</td>
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<td>34803</td>
<td>Endovascular repair of infrarenal abdominal aortic aneurysm or dissection; using modular bifurcated prosthesis</td>
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<tr>
<td>34805</td>
<td>Endovascular repair of infrarenal abdominal aortic aneurysm or dissection; using aorto-uniliac or aorto-unifemoral prosthesis</td>
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<tr>
<td>34802</td>
<td>Endovascular repair of infrarenal abdominal aortic aneurysm or dissection; using modular bifurcated prosthesis</td>
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<td>CPT Code</td>
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<tr>
<td>34800</td>
<td>Endovascular repair of infrarenal abdominal aortic aneurysm or dissection; using aorto-aortic tube prosthesis</td>
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<tr>
<th>ICD-10 Code</th>
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<tr>
<td>I71.3</td>
<td>Abdominal aortic aneurysm, ruptured</td>
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<tr>
<td>I71.4</td>
<td>Abdominal aortic aneurysm, without rupture</td>
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<tr>
<td>I71.9</td>
<td>Aortic aneurysm of unspecified site, without rupture</td>
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<tr>
<td>I79.0</td>
<td>Aneurysm of aorta in diseases classified elsewhere</td>
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<tr>
<td>I74.0</td>
<td>Embolism and thrombosis of abdominal aorta</td>
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<tr>
<td>I74.01</td>
<td>Saddle embolus of abdominal aorta</td>
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<tr>
<td>I74.09</td>
<td>Other arterial embolism and thrombosis of abdominal aorta</td>
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<th>HCPCS Level II Code</th>
<th>Description</th>
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