



Topic Exploration Report

Topic explorations are designed to provide a high-level briefing on new topics submitted for consideration by Health Technology Wales. The main objectives of this report are to:

1. Determine the quantity and quality of evidence available for a technology of interest.
2. Identify any gaps in the evidence/ongoing evidence collection.
3. Inform decisions on topics that warrant fuller assessment by Health Technology Wales.

Topic:	Endovascular procedures
Topic exploration report number:	TER169

Introduction and aims

Health Technology Wales researchers searched for evidence on the clinical and cost effectiveness of endovascular procedures (such as angioplasty, endovascular repair (EVAR) and thoracic endovascular aneurysm repair (TEVAR)) compared with current standard of care for people with stenosis (venous or arterial) or aneurysm, for example. In most cases, standard care would entail open surgery, but we compared endovascular interventions to any other interventions.

Summary of findings

Health Technology Wales researchers searched for evidence on the clinical and cost effectiveness of using endovascular procedures compared to current standard of care. In most cases, standard care would entail open surgery, but we compared endovascular interventions to any other interventions.

An initial high-level search indicated that there is a very large body of evidence on the use of endovascular procedures. Therefore this report focuses on identifying relevant secondary evidence (technology assessments, evidence-based guidelines) on the use of any endovascular procedure in any population. Secondary evidence relating to various endovascular procedures and populations was found from each of Healthcare Improvement Scotland, HIQA, SIGN and NICE.

We also carried out a search for relevant systematic reviews, but due to the large volume of possibly relevant evidence, reporting the results of a search on the use of endovascular procedures in any population was not possible. We therefore restricted this to the populations of most interest: people with stenosis or aneurysm.

Evidence

Guidelines

Healthcare Improvement Scotland (4 results)

1. Evidence Note 87 and Advice Statement 004-16: Endovascular therapy using mechanical thrombectomy devices for patients with acute ischaemic stroke. The advice statement concludes that clinical and cost effectiveness evidence supports endovascular therapy with mechanical thrombectomy using stent retrievers, in addition to standard care, for highly selected patients with acute ischaemic stroke who have confirmed large vessel occlusion, where service delivery can address the need for accurate, protocol-driven patient selection based on expert multidisciplinary interpretation of non-invasive neuroimaging, timely access to suitable neurointervention expertise and facilities and appropriate patient numbers for development and maintenance of expertise.
2. Evidence Note 78 and Advice Statement 006-18: Complex endovascular aneurysm repair for juxta-renal or thoraco-abdominal aortic aneurysm. The Advice Statement notes that evidence is limited and low quality and so concludes that it is difficult to establish its advantage over open surgical repair.

SIGN Guidelines

SIGN 151: Management of stable angina. Includes a recommendation on assessment prior to surgery, which notes that the 'inherent procedural risk' of endovascular aneurysm repair is 'intermediate (1-5%)'. It states that surgical risk estimate is a broad approximation of 30-day risk of cardiovascular death and myocardial infarction that takes into account only the specific surgical intervention, without considering comorbidities. The surgical risk estimate is based on the Society of Cardiology/European Society of Anaesthesiology Guidelines on non-cardiac surgery: cardiovascular assessment and management

SIGN 137: Management of lung cancer. 10.3.2: B: In patients with superior vena cava obstruction due to small cell lung cancer, SACT/radiotherapy is recommended as initial treatment, but stenting may be considered for relapse or persistent superior vena cava obstruction. In patients with superior vena cava obstruction due to non-small cell lung cancer, stenting may be considered as a primary treatment.

SIGN147: Management of chronic heart failure. Includes a question on the benefits/harms of revascularisation (coronary artery bypass grafting, percutaneous coronary intervention, angioplasty) for patients with heart failure. Recommendation: Patients with heart failure and angina who require revascularisation can be considered for coronary artery bypass grafting. This can be considered after assessment of their operative risk.

SIGN 148: Acute coronary syndrome. Recommendation: Intracoronary stent implantation should be used in patients undergoing primary percutaneous coronary intervention

SIGN 116: Management of diabetes. Subgroup analysis has shown that primary angioplasty is equally successful in patients with and without diabetes, and may be more effective than thrombolytic therapy in patients with diabetes either with or without acute myocardial infarction. Recommendation: Patients with an ST elevation acute coronary syndrome should be treated immediately with primary percutaneous coronary intervention.

Patients with diabetes are at increased risk of complications during revascularisation procedures.

Recommendation: For patients with multivessel disease, CABG with use of the internal mammary arteries is preferred over PTCA.

Patients with diabetes undergoing angioplasty should be treated with stents where feasible, and receive adjunctive therapy with a platelet glycoprotein

NICE Guidelines

CG147: Peripheral arterial disease: diagnosis and management (Published August 2012; updated February 2018):

Relevant recommendations:

1.5 Management of intermittent claudication

1.5.3 Offer angioplasty for treating people with intermittent claudication only when:

- advice on the benefits of modifying risk factors has been reinforced (see [recommendation 1.2.1](#)) and
- a supervised exercise programme has not led to a satisfactory improvement in symptoms and
- Imaging has confirmed that angioplasty is suitable for the person. [2012]

1.5.4 Do not offer primary stent placement for treating people with intermittent claudication caused by aorto-iliac disease (except complete occlusion) or femoro-popliteal disease. [2012]

1.5.5 Consider primary stent placement for treating people with intermittent claudication caused by complete aorto-iliac occlusion (rather than stenosis). [2012]

1.5.6 Use bare metal stents when stenting is used for treating people with intermittent claudication. [2012]

1.6 Management of critical limb ischaemia

Revascularisation

1.6.2 Offer angioplasty or bypass surgery for treating people with critical limb ischaemia who require revascularisation, taking into account factors including:

- comorbidities
- pattern of disease
- availability of a vein
- patient preference. [2012]

1.6.3 Do not offer primary stent placement for treating people with critical limb ischaemia caused by aorto-iliac disease (except complete occlusion) or femoro-popliteal disease. [2012]

1.6.4 Consider primary stent placement for treating people with critical limb ischaemia caused by complete aorto-iliac occlusion (rather than stenosis). [2012]

1.6.5 Use bare metal stents when stenting is used for treating people with critical limb ischaemia. [2012]

NG128: Stroke and transient ischaemic attack in over 16s: diagnosis and initial management. (Published May 2019)

Thrombectomy for people with acute ischaemic stroke

1.4.5 Offer thrombectomy as soon as possible and within 6 hours of symptom onset, together with intravenous thrombolysis (if not contraindicated and within the licensed time window), to people who have:

- acute ischaemic stroke and
- confirmed occlusion of the proximal anterior circulation demonstrated by computed tomographic angiography (CTA) or magnetic resonance angiography (MRA)

taking into account the factors in recommendation 1.4.8. [2019]

1.4.6 Offer thrombectomy as soon as possible to people who were last known to be well between 6 hours and 24 hours previously (including wake-up strokes):

- who have acute ischaemic stroke and confirmed occlusion of the proximal anterior circulation demonstrated by CTA or MRA and
- if there is the potential to salvage brain tissue, as shown by imaging such as CT perfusion or diffusion-weighted MRI sequences showing limited infarct core volume

taking into account the factors in recommendation 1.4.8. [2019]

1.4.7 Consider thrombectomy together with intravenous thrombolysis (where not contraindicated and within the licensed time window) as soon as possible for people last known to be well up to 24 hours previously (including wake-up strokes):

- who have acute ischaemic stroke and confirmed occlusion of the proximal posterior circulation (that is, basilar or posterior cerebral artery) demonstrated by CTA or MRA and
- if there is the potential to salvage brain tissue, as shown by imaging such as CT perfusion or diffusion-weighted MRI sequences showing limited infarct core volume

taking into account the factors in recommendation 1.4.8. [2019]

1.4.8 Take into account the person's overall clinical status and the extent of established infarction on initial brain imaging to inform decisions about thrombectomy. Select people who have (in addition to the factors in recommendations 1.4.5 to 1.4.7):

- a pre-stroke functional status of less than 3 on the modified Rankin scale and
- a score of more than 5 on the National Institutes of Health Stroke Scale (NIHSS). [2019]

NG39: Major trauma: assessment and initial management. (Published February 2016)

Interventional radiology

NG39 links to recommendations from the NICE guideline on major trauma: service delivery. The NICE guideline on [major trauma: service delivery](#) contains a recommendation for ambulance and hospital trust boards, medical directors and senior managers on interventional radiology and definitive open surgery.

1.5.40 Use interventional radiology techniques in patients with active arterial pelvic haemorrhage unless immediate open surgery is needed to control bleeding from other injuries.

1.5.41 Consider interventional radiology techniques in patients with solid-organ (spleen, liver or kidney) arterial haemorrhage.

1.5.42 Consider a joint interventional radiology and surgery strategy for arterial haemorrhage that extends to surgically inaccessible regions.

1.5.43 Use an endovascular stent graft in patients with blunt thoracic aortic injury.

An interactive flowchart on aortic aneurysms gives the following recommendations based on the NICE technology appraisal on endovascular stent-grafts for the treatment of abdominal aortic aneurysms (TA167), published in February 2009. This guidance refers to the use of endovascular stent-grafts or open surgical repair only for the treatment of infra-renal abdominal aortic aneurysms.

- Endovascular stent-grafts are recommended as a treatment option for patients with unruptured infra-renal abdominal aortic aneurysms, for whom surgical intervention (open surgical repair or endovascular aneurysm repair) is considered appropriate.
- The decision on whether endovascular aneurysm repair is preferred over open surgical repair should be made jointly by the patient and their clinician after assessment of a number of factors including:
 - aneurysm size and morphology
 - patient age, general life expectancy and fitness for open surgery
 - the short- and long-term benefits and risks of the procedures including aneurysm-related mortality and operative mortality.
- Endovascular aneurysm repair should only be performed in specialist centres by clinical teams experienced in the management of abdominal aortic aneurysms. The teams should have appropriate expertise in all aspects of patient assessment and the use of endovascular aortic stent-grafts.
- Endovascular aortic stent-grafts are not recommended for patients with ruptured aneurysms except in the context of research. Given the difficulties of conducting randomised controlled trials, it is recommended that data should be collected through existing registries to enable further research.

Further to NICE TA167, a draft for consultation of the NICE guideline on abdominal aortic aneurysm: diagnosis and management was made available in May 2018. This guideline is intended as an update of TA167. In June 2019, NICE announced that the timelines of the guideline were extended to allow for work to be carried out to support implementation of the guideline. The publication date of this guideline has not yet been announced, and the guidelines below are draft and subject to change in the final, published, guideline.

The draft recommendations from this unpublished guideline which are relevant to EVAR include:

Repairing unruptured aneurysms:

- 1.5.3 Do not offer endovascular repair (EVAR) to people with unruptured infrarenal AAA if open surgical repair is suitable
- 1.5.4 Do not offer EVAR to people with unruptured infrarenal AAA if open surgical repair is unsuitable because of their anaesthetic and medical condition
- 1.5.5 Do not offer complex EVAR to people with an unruptured AAA if open surgical repair is a suitable option, except as part of a randomized controlled trial comparing complex EVAR with open surgical repair
- 1.5.6 Do not offer complex EVAR to people with an unruptured AAA if open surgical repair is unsuitable because of their anaesthetic and medical condition

The recommendations are based on an update of a 2014 Cochrane systematic review on standard EVAR which itself included 4 RCTs. Updates identified new publications pertaining to studies which were already included in the Cochrane systematic review, so 4 RCTs were included in total for the review question on standard EVAR. For complex EVAR, 1 study was included. Five UK cost utility analyses considering standard EVAR were included in the health economic evidence review for this question. Further to these studies, a new economic model was prioritised by the guideline committee for this review question. The new NICE model considering standard EVAR was considered to have minor limitations and to be directly applicable to the UK

NHS, while the new model considering complex EVAR was deemed to have potentially serious limitations.

Repairing ruptured aneurysms:

1.6.1 Consider endovascular repair (EVAR) or open surgical repair for people with a ruptured infrarenal abdominal aortic aneurysm (AAA) Be aware that:

- EVAR provides more benefit than open surgical repair for most people, especially for women and for men over the age of 70
- Open surgical repair is likely to provide a better balance of benefits and harms in men under the age of 70

1.6.3 Do not offer complex EVAR to people with a ruptured AAA if open surgical repair is suitable, except as part of a randomised controlled trial comparing complex EVAR with open surgical repair

The recommendations are based on four RCTs for standard EVAR and no included clinical studies for complex EVAR. Two health economic studies were included for emergency repair of ruptured infrarenal AAA and no evidence was found for ruptured complex AAA. In addition, a new health economic model was developed for this review question.

Anaesthesia and analgesia:

1.6.4 Consider using local infiltrative anaesthesia alone for people having EVAR of a ruptured AAA.

Abdominal compartment syndrome:

1.6.5 Be aware that people can develop abdominal compartment syndrome after EVAR or open surgical repair of a ruptured AAA

1.6.6 Assess people for abdominal compartment syndrome if their condition does not improve after EVAR or open surgical repair of a ruptured AAA.

Monitoring for complications after endovascular aneurysm repair:

1.7.1 Enrol people who have had endovascular aneurysm repair (EVAR) into a surveillance imaging programme

1.7.2 Base the frequency of surveillance imaging on the person's risk of graft-related complications

1.7.3 Use contrast-enhanced CT angiography to detect postoperative complications and further aneurysm expansion

1.7.4 If contrast-enhanced CT angiography is contraindicated, consider contrast-enhanced ultrasound to detect endoleaks and further aneurysm expansion.

1.7.5 Do not use colour duplex ultrasound as the main imaging technique to detect endoleaks in people who have had an EVAR

Managing endoleaks after endovascular aneurysm repair:

1.8.1 Consider open, endovascular or percutaneous intervention for type I and type III endoleaks following endovascular aneurysm repair (EVAR).

1.8.2 Consider intervention for type II endoleaks in people who have sac expansion following VAR.

1.8.3 Consider further investigation of type V endoleaks following EVAR

The draft guideline also includes a draft research recommendation on the effectiveness and cost effectiveness of complex endovascular repair (EVAR) versus open surgical repair in people for whom open surgical repair is suitable for:

- Elective repair of an unruptured AAA or
- Emergency repair of a ruptured AAA

The flowchart on aortic aneurysms links to the NICE medical technologies guidance on the E-vita open plus for treating complex aneurysms and dissections of the thoracic aorta. MTG16 states the following:

The case for adopting the E-vita open plus for treating complex aneurysms and dissections of the thoracic aorta, in a carefully selected group of people, is supported by the evidence.

Using the E-vita open plus could remove the need for a second procedure and the associated risk of serious complications, and it should therefore be considered for people:

- who would otherwise need a 2-stage repair procedure because their aortic disease extends into or beyond the distal part of their aortic arch (into the proximal descending aorta), but
- who would not need additional intervention (such as stent grafting) in the descending aorta.

The E-vita open plus is estimated to generate cost savings compared with current 2-stage repair from about 2 years after the procedure. The estimated cost saving per patient at 5 years after the procedure is around £13,800 when compared with 2-stage repair involving open insertion of a vascular graft, £9,850 when compared with 2-stage repair involving endovascular stent grafting and £12,000 when compared with open surgical debranching followed by endoluminal stent grafting. At 10 years after the procedure, the estimated cost savings range from around £21,850 to £28,160 across the 3 comparators.

The search also identified the following interventional procedures guidance:

- IPG163: Stent-graft placement in abdominal aortic aneurysm (March 2006)
- IPG390: Endovascular stent-grafting of popliteal aneurysms (April 2011)
- IPG127: Endovascular stent-graft placement in thoracic aortic aneurysms and dissections (June 2005)
- IPG105: Coil embolisation of unruptured intracranial aneurysms (January 2005)

CG167: Myocardial infarction with ST-segment elevation: acute management (July 2013)
<https://pathways.nice.org.uk/pathways/myocardial-infarction-with-st-segment-elevation>

Recommendations:

- Presentation within 12 hours:
 - Offer coronary angiography, with follow-on primary PCI if indicated, as the preferred coronary reperfusion strategy for people with acute STEMI if:
 - Presentation is within 12 hours of onset of symptoms and
 - Primary PCI can be delivered within 120 minutes of the time when fibrinolysis could have been given.

- Offer coronary angiography, with follow-on primary PCI if indicated, to people with acute STEMI and cardiogenic shock who present within 12 hours of the onset of symptoms of STEMI.
- Presentation beyond 12 hours
 - Consider coronary angiography with follow-on PCI if indicated, for people with acute STEMI presenting more than 12 hours after the onset of symptoms if there is evidence of continuing myocardial ischaemia.
 - Consider coronary angiography, with a view to coronary revascularisation if indicated, for people with acute STEMI who present more than 12 hours after the onset of symptoms and who have cardiogenic shock or go on to develop it.

CG126: Stable angina: management (August 2016)

- Consider revascularisation (CABG or PCI) for people with stable angina whose symptoms are not satisfactorily controlled with optimal medical treatment.
- Offer coronary angiography to guide treatment strategy for people with stable angina whose symptoms are not satisfactorily controlled with optimal medical treatment. Additional non-invasive or invasive functional testing may be required to evaluate angiographic findings and guide treatment decisions.
- Ensure that there is a regular multidisciplinary team meeting to discuss the risks and benefits of continuing drug treatment or revascularisation strategy (CABG or PCI) for people with stable angina. The team should include cardiac surgeons and interventional cardiologists. Treatment strategy should be discussed for the following people, including but not limited to:
 - people with left main stem or anatomically complex three-vessel disease
 - people in whom there is doubt about the best method of revascularisation because of the complexity of the coronary anatomy, the extent of stenting required or other relevant clinical factors and comorbidities.

CG172: Myocardial infarction: cardiac rehabilitation and prevention of further cardiovascular disease (November 2013)

Recommendations: Offer everyone who has had an MI a cardiological assessment to consider whether coronary revascularisation is appropriate. This should take into account comorbidity.

Systematic reviews

We identified six Cochrane Reviews that assessed that compared the effectiveness of endovascular procedures to other (more invasive) interventions for treatment of aneurysm or stenosis.

EVAR for stenosis

We identified a single review of endovascular procedures for stenosis (Bonati, 2012). This only included cases of atherosclerotic carotid stenosis, and compared endovascular treatment (including balloon angioplasty or stenting) with endarterectomy or medical therapy. Sixteen randomised trials involving 7572 patients were included in the review. The authors concluded that endovascular treatment is associated with an increased risk of peri-procedural stroke or death compared with endarterectomy. However, this excess risk appears to be limited to older patients. The longer term efficacy of endovascular treatment and the risk of restenosis are unclear and require further follow-up of existing trials. Further trials are needed to determine the optimal treatment for asymptomatic carotid stenosis.

EVAR for abdominal aortic aneurysm

We identified three reviews of endovascular procedures for abdominal aortic aneurysms (Capoccia 2015, Paravastu 2014, Badger 2017). All compared EVAR to open surgical repair: the review by Paravastu also compared EVAR to best medical care in patients who were not fit for surgery.

A review of EVAR for any type of abdominal aortic aneurysm (Paravastu 2014) found four randomised trials (2790 patients included) comparing EVAR to open surgery, and concluded that in individuals considered fit for conventional surgery, EVAR was associated with lower short-term mortality than open surgical repair. However, this benefit from EVAR did not persist at the intermediate- and long-term follow ups. Individuals undergoing EVAR had a higher reintervention rate than those undergoing open surgical repair. Most of the reinterventions undertaken following EVAR, however, were catheter-based interventions associated with low mortality. Operative complications, health-related quality of life and sexual dysfunction were generally comparable between EVAR and open surgical repair. However, there was a slightly higher incidence of pulmonary complications in the open surgical repair group than in the EVAR group.

One review of EVAR specifically focussed on treatment for ruptured abdominal aortic aneurysm (Badger 2017). Four randomised trials were identified, but the authors' conclusions were limited by the paucity of data. Specifically, the evidence suggested there is no difference in 30-day mortality between eEVAR and open repair. Not enough information was provided for complications for us to make a well-informed conclusion, although it is possible that eEVAR is associated with a reduction in bowel ischaemia. Long-term data were lacking for both survival and late complications. More high-quality randomised controlled trials comparing eEVAR and open repair for the treatment of RAAA are needed to better understand if one method is superior to the other, or if there is no difference between the methods on relevant outcomes.

One review specifically studied EVAR for inflammatory abdominal aortic aneurysms (Capoccia 2015) and found no evidence that could be used to assess their effectiveness compared to open repair.

EVAR for other aneurysms

One review (Ulug 2012) investigated uncomplicated (without rupture of the organs or malperfusion of the extremities) subacute or chronic type B aortic dissection, treated by either stenting adjunctive to best medical treatment versus best medical treatment alone. A single relevant randomised trial was identified. Two-year all cause survival was not statistically significantly different between study groups. The authors concluded that the evidence was insufficient to make any practice recommendations, and recommended cases be followed up for at least five years in order to establish whether endovascular interventions in these patients are of long term benefit.

One review (Joshi 2019) compared endovascular stent grafting to conventional open surgical repair in patients undergoing unilateral or bilateral prophylactic repair of asymptomatic popliteal artery aneurysm. The authors identified one relevant randomised trial of a small number of patients (n = 30). At one year there was moderate-certainty evidence that primary patency may be improved in the surgery group but assisted primary patency rates were similar between groups. At four years there was no clear benefit from either endovascular stent graft or surgery to primary or assisted primary patency (moderate-certainty evidence). The authors

concluded that as both operating time and hospital stay were reduced in the endovascular group (moderate-certainty evidence), it may represent a viable alternative to open repair of PAA.

Conclusions

One guideline (NG39 Major trauma: assessment and initial management) gives specific recommendations on service delivery by interventional radiologists. Several other sources of evidence were identified that make recommendations relating more generally to endovascular procedures, in various populations.

Six high-quality systematic reviews were identified that compared the effectiveness of endovascular procedures to other (more invasive) interventions specifically for the treatment of aneurysm or stenosis. Only one review covered stenosis and looked specifically at atherosclerotic carotid stenosis. Systematic reviews of using EVAR as an intervention for people with aneurysms highlighted varying levels of evidence depending on the exact patient group studied.

Brief literature search results

Resource	Results
<p>HTA organisations</p> <p>Healthcare Improvement Scotland:</p>	<p>Four results for search term 'endovascular':</p> <ul style="list-style-type: none"> Nice (Multiple) Technology Appraisal Guidance No 167: Endovascular stent-grafts for the treatment of abdominal aortic aneurysms. SHTG Evidence Note and SHTG Advice Statement: Endovascular therapy using mechanical thrombectomy devices for patients with acute ischaemic stroke SHTG Evidence Note and SHTG Advice Statement: Complex endovascular aneurysm repair in patients with juxta-renal or thoraco-abdominal aortic aneurysm Summary of application of NICE Interventional Procedures Guidance in Scotland, including links to Interventional Procedures Guidance including IPG658 'Endovascular insertion of an intrasaccular wire-mesh blood flow disruption device for intracranial aneurysms'. <p>No relevant results found for search term 'angioplasty'</p>
<p>UK guidelines and guidance</p> <p>SIGN</p>	<p>For search term 'endovascular':</p> <p>SIGN 129: Antithrombotics: indications and management.</p> <p>SIGN 151: Management of stable angina</p> <p>SIGN 137: Management of lung cancer</p> <p>For search term 'angioplasty'</p> <p>SIGN147: Management of chronic heart failure</p> <p>SIGN 148: Acute coronary syndrome</p> <p>SIGN 116: Management of diabetes</p>
<p>NICE</p>	<p><u>For the search term 'endovascular' with filters for guidelines, technology appraisals, diagnostics, interventional procedures, and medical technologies guidance (46 results)</u></p> <p>Guidelines only:</p>

CG147: Peripheral arterial disease: diagnosis and management

NG89: Venous thromboembolism in over 16s: reducing the risk of hospital-acquired deep vein thrombosis or pulmonary embolism

NG128: Stroke and transient ischaemic attack in over 16s: diagnosis and initial management.

NG39: Major trauma: assessment and initial management

For the term 'endovascular aneurysm repair' with filters for guidelines, technology appraisals, diagnostics, interventional procedures, and medical technologies (8 results):

Aortic aneurysms overview interactive flowchart: <https://pathways.nice.org.uk/pathways/aortic-aneurysms>

Neurological conditions interactive flowchart <https://pathways.nice.org.uk/pathways/neurological-conditions>

IPG163: Stent-graft placement in abdominal aortic aneurysm (March 2006)

TA167: Endovascular stent-grafts for the treatment of abdominal aortic aneurysms (February 2009)

NG89: Venous thromboembolism in over 16s: reducing the risk of hospital-acquired deep vein thrombosis or pulmonary embolism (published March 2018; updated August 2019)

IPG390: Endovascular stent-grafting of popliteal aneurysms (April 2011)

MTG16: E-vita open plus for treating complex aneurysms and dissections of the thoracic aorta

IPG127: Endovascular stent-graft placement in thoracic aortic aneurysms and dissections (June 2005)

IPG105: Coil embolisation of unruptured intracranial aneurysms

For the term 'angioplasty' with filters for guidelines, technology appraisals, diagnostics, interventional procedures, and medical technologies (39 results)

Guidelines only:

	<p>CG147: Peripheral arterial disease: diagnosis and management (February 2018) https://pathways.nice.org.uk/pathways/lower-limb-peripheral-arterial-disease</p> <p>CG167: Myocardial infarction with ST-segment elevation: acute management (July 2013) https://pathways.nice.org.uk/pathways/myocardial-infarction-with-st-segment-elevation</p> <p>CG126: Stable angina: management (August 2016) https://pathways.nice.org.uk/pathways/chest-pain</p> <p>CG172: Myocardial infarction: cardiac rehabilitation and prevention of further cardiovascular disease (November 2013) https://pathways.nice.org.uk/pathways/myocardial-infarction-rehabilitation-and-preventing-further-cardiovascular-disease</p>
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Secondary literature and economic evaluations

<p>Cochrane library</p>	<p>Badger S, Forster R, Blair PH, Ellis P, Kee F, Harkin DW. Endovascular treatment for ruptured abdominal aortic aneurysm. Cochrane Database of Systematic Reviews 2017, Issue 5. Art. No.: CD005261. DOI: 10.1002/14651858.CD005261.pub4.</p> <p>Bonati LH, Lyrer P, Ederle J, Featherstone R, Brown MM. Percutaneous transluminal balloon angioplasty and stenting for carotid artery stenosis. Cochrane Database of Systematic Reviews 2012, Issue 9. Art. No.: CD000515. DOI: 10.1002/14651858.CD000515.pub4.</p> <p>Capoccia L, Riambau V. Endovascular repair versus open repair for inflammatory abdominal aortic aneurysms. Cochrane Database of Systematic Reviews 2015, Issue 4. Art. No.: CD010313. DOI: 10.1002/14651858.CD010313.pub2.</p> <p>Joshi D, Gupta Y, Ganai B, Mortensen C. Endovascular versus open repair of asymptomatic popliteal artery aneurysm. Cochrane Database of Systematic Reviews 2019, Issue 12. Art. No.: CD010149. DOI: 10.1002/14651858.CD010149.pub3.</p> <p>Paravastu SCV, Jayarajasingam R, Cottam R, Palfreyman SJ, Michaels JA, Thomas SM. Endovascular repair of abdominal aortic aneurysm. Cochrane Database of Systematic Reviews 2014, Issue 1. Art. No.: CD004178. DOI: 10.1002/14651858.CD004178.pub2.</p> <ul style="list-style-type: none"> • Ulug P, McCaslin JE, Stansby G, Powell JT. Endovascular versus conventional medical treatment for uncomplicated chronic type B aortic dissection. Cochrane Database of Systematic Reviews 2012, Issue 11. Art. No.: CD006512. DOI: 10.1002/14651858.CD006512.pub2.
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Concepts used:	'endovascular' 'angioplasty' 'endovascular aneurysm repair' 'aneurysm' 'stenosis'