Are there any different Recommendations in the 2018 AAA Guidelines from the German Vascular Society (DGG)?

Prof. Dr. E. Sebastian Debus, FEBS, FEBVS
Chair, Department for Vascular Medicine
Vascular Surgery – Angiology – Endovascular Interventions
German Aortic Center Hamburg
Founded 1962, combines 178 scientific societies from all medical specialties

Independent from other associations (i.e. Federal Medical Council, German Medical Faculty Association, Union of Specialists Professional Associations u.a.)

AWMF is the German national member in the "Council for International Organizations of Medical Sciences CIOMS" at WHO/Geneva
<table>
<thead>
<tr>
<th>Level</th>
<th>Type of Study</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>S 1</td>
<td>Practice Recommendations from Expert Groups</td>
<td>Consensus, informal Process</td>
</tr>
<tr>
<td>S 2k</td>
<td>Consensus Based</td>
<td>Representative Group of Experts Structured Consensus Process</td>
</tr>
<tr>
<td>S 2e</td>
<td>Evidence Based</td>
<td>Representative Group of Experts Systematic Literature Search and Assessment</td>
</tr>
<tr>
<td>S 3</td>
<td>Evidence- and Consensus Based</td>
<td>Representative Group of Experts Systematic Literature Review and Assessment Structured Consensus Process</td>
</tr>
</tbody>
</table>

**Guidelines Program, German Vascular Society**

- S1 2
- S2 20
- S3 S3 Guidelines on Diagnostics, Therapy and Follow Up of extracranial Carotid Stenosis (8/2012)
- S3-Guidelines for Screening, Diagnostics, Therapy and Follow-up of Abdominal Aortic Aneurysms
S3-Leitlinie zu Screening, Diagnostik, Therapie und Nachsorge des Bauchaortenaneurysmas

E.S. Debus (Sprecher der Steuergruppe), F. Heidemann (Sekretär der Steuergruppe), W. Gross-Fengeli, A. Mahle, M. Muhl, K. Pfitzer, S. Roth, Ch. Stroszczyński, A. Waßer, N. Weiss, M. Wilhelm, R.T. Grundmann (Steuergruppe)

Deutsche Gesellschaft für Gefäßchirurgie und Gefäßmedizin (DGG)
In Zusammenarbeit mit
Deutsche Gesellschaft für Anästhesiologie und Intensivmedizin (DGAI)
Deutsche Gesellschaft für Angiologie / Gesellschaft für Gefäßmedizin (DGA)
Deutsche Gesellschaft für Chirurgie (DGCh)
Deutsche Gesellschaft für Interventionelle Radiologie (DEGIR)
Deutsche Gesellschaft für Thorax-, Herz- und Gefäßchirurgie (DGTGH)
Deutsche Gesellschaft für Ultraschall in der Medizin (DEGUM)
Deutsche Geäßäule e.V.
Deutsche Interdisziplinäre Vereinigung für Intensiv- und Notfallmedizin (DIVI)
Deutsche Röntgen-Gesellschaft (DRG)

Online Oct 15 2018

Kurzfassung S3-Leitlinie zu Screening, Diagnostik, Therapie und Nachsorge des Bauchaortenaneurysmas

Evidence in vascular medicine

E.S. Debus*; F. Heidemann*; W. Gross-Fengeli*; A. Mahle*; M. Muhl*; K. Pfitzer*; S. Roth*; Ch. Stroszczyński*; A. Waßer*; N. Weiss*; M. Wilhelm*; R.T. Grundmann*;1

* Klinik und Poliklinik für Gefäßchirurgie, Universitäts-Herzzentrum Hamburg, Hamburg, Germany;
** Abteilung Diagnostik und Interventionelle Radiologie, Abteilung „Klinische Radiologie“, Klinikum Hamburg-Harburg, Hamburg, Germany;
*** Bereich Angiologie, Universitätsklinikum der LMU München, München, Germany; 
**** Klinik für Gefäßchirurgie, Universitätsklinikum Regensburg, Regensburg, Germany;
***** Klinik für Gefäßchirurgie, St. Marien Hospital, Hannover, Germany;
****** Klinik für Röntgendiagnostik, Universitätsklinikum Regensburg, Regensburg, Germany

Online Jan 2019 (exp)

Short version of the S3 guideline on screening, diagnosis, therapy and follow-up of abdominal aortic aneurysms
Taxonomy of Recommendations

ESVS (ESC)

SVS (GRADE)

DGG (AWMF/Oxford)

Table 1: Scheme for grading of recommendation strength

<table>
<thead>
<tr>
<th>Level of recommendation</th>
<th>Characterization</th>
<th>Syntax</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Strong recommendation</td>
<td>Strongly (not) recommended</td>
</tr>
<tr>
<td>B</td>
<td>Recommendation</td>
<td>Should/should not</td>
</tr>
<tr>
<td>0</td>
<td>Recommendation open</td>
<td>Can be considered/can be dispensed with</td>
</tr>
</tbody>
</table>

Table 2: Classification of evidence grading for treatment, prevention, and etiological studies

<table>
<thead>
<tr>
<th>Grado</th>
<th>Studies on treatment, prevention and etiological studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>1a</td>
<td>Systematic review through RCT</td>
</tr>
<tr>
<td>1b</td>
<td>An RCT (with a tight confidence interval)</td>
</tr>
<tr>
<td>1c</td>
<td>All or nothing principal</td>
</tr>
<tr>
<td>2a</td>
<td>Systematic review of well-planned cohort studies</td>
</tr>
<tr>
<td>2b</td>
<td>A well-planned cohort study or a lesser quality RCT</td>
</tr>
<tr>
<td>2c</td>
<td>Outcome studies, ecological studies</td>
</tr>
<tr>
<td>3a</td>
<td>Systematic review of case-controlled studies</td>
</tr>
<tr>
<td>3b</td>
<td>A case-controlled study</td>
</tr>
<tr>
<td>4</td>
<td>Case series or lesser quality cohort/case-controlled studies</td>
</tr>
<tr>
<td>5</td>
<td>Expert opinion without explicit evaluation of evidence based on physiological models/laboratory research</td>
</tr>
</tbody>
</table>

*RCT* randomized controlled study
Management of Abdominal Aortic Aneurysms
Clinical Practice Guidelines of the European Society for Vascular Surgery

F.L. Moll¹,*, J.T. Powell³, G. Fраedrich², F. Verzini², S. Haulon², M. Waltham¹, J.J.A. van Herwaarden³, P.J.E. Holt³, J.W. van Keulen¹,², B. Rантер³, F.J.V. Schlösser³, F. Setacci⁴, J.-B. Rиco⁴

*Department of Vascular Surgery, University Medical Center Utrecht, Utrecht, The Netherlands
²Imperial College, London, UK
³Queen Mary, University of London, London, UK
⁴La V elementary School, University of Geneva, Geneva, Switzerland

Submitted 4 September 2010, accepted 12 September 2010

Introduction

Purpose of these guidelines

The European Society for Vascular Surgery (ESVS) appointed the AAA Guidelines Committee to write the current Clinical Practice Guidelines on the management of abdominal aortic aneurysms (AAA). Guideline development was recommended in 1992 by the Institute of Medicine to improve decision making for specific patient circumstances and to decrease the variability in inappropriate and inappropriate...
Many solid randomized trials – AAA size threshold
Screening

We recommend a one-time ultrasound screening for abdominal aortic aneurysms in men or women 65-75 years of age with a history of tobacco use.

Level of recommendation: Strong
Quality of evidence: High

We suggest ultrasound screening for AAA in first-degree relatives of patients who present with an AAA. Screening should be performed in first degree relatives who are between 65-75 years of age or in those over 75 years of age and in good health.

Level of recommendation: Weak
Quality of evidence: Low

We suggest a one-time ultrasound screening for abdominal aortic aneurysms in men or women over 75 years of age with a history of tobacco use and in otherwise good health who have not previously received a screening ultrasound.

Level of recommendation: Weak
Quality of evidence: Low

Recommendation. Screening for AAA with ultrasound:

- is strongly recommended for all men >65 years. Level of evidence 1a/recommendation grade A.
- is strongly recommended for women >65 years with a current or past history of smoking. Level of evidence 2a/recommendation grade A.
- should not be recommended for female non-smokers without a family AAA history. Level of evidence 2a/recommendation grade B.
- should be considered for first-degree siblings of patients with AAA. Level of evidence 2c/recommendation grade B.

RESCAN Coll 2013, Thompson et al. 2013
Surveillance for Small Aneurysms

We suggest surveillance imaging at six-month intervals for patients with an abdominal aortic aneurysm between 5.0 and 5.4 cm in diameter.

**Recommendation.** Monitoring intervals for small asymptomatic AAA in men:
- every 2 years for AAA with a diameter of 3.0–3.9 cm,
- once a year for AAA with a diameter of 4.0–4.9 cm,
- every 6 months for AAA with a diameter of 5.0–5.4 cm. **Level of evidence** 2a/recommendation grade A.

**Recommendation.** Monitoring intervals for small asymptomatic AAA in women:
- every 2–3 years for AAA with a diameter of 3.0–3.9 cm,
- every 6 months for AAA with a diameter of 4.0–4.5 cm*,
- every 3 months for AAA with a diameter >4.5–4.9 cm*.

*If the diameter remains constant, the interval can be extended. **Level of evidence** 3b/recommendation grade B.

RESCAN Coll 2013, Thompson et al. 2013
## Risk of Rupture Decreases....


Powell JT. Circulation 2016; 134: 1149-1151.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 3 cm</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- 3.9 cm</td>
<td>0.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- 4.9 cm</td>
<td>1.1</td>
<td>&lt; 5.5 cm</td>
<td>0 – 1.61</td>
</tr>
<tr>
<td>- 5.9 cm</td>
<td>3.3</td>
<td>&lt; 6.0 cm</td>
<td>3.5</td>
</tr>
<tr>
<td>- 6.9 cm</td>
<td>9.4</td>
<td>&lt; 7.0 cm</td>
<td>4.1</td>
</tr>
<tr>
<td>- 7.9 cm</td>
<td>24</td>
<td>&gt; 7.0 cm</td>
<td>6.3</td>
</tr>
</tbody>
</table>

### 2.3 Rupture risk

**Assertion.** The rupture risk for small aneurysms (3.0–5.5 cm) ranges between 0 and 1.61/100 person-years. Level of evidence 1b.

**Assertion.** The pooled annual rupture risk for patients not fit for surgery is 3.5% for AAA sized from 5.5 cm to 6.0 cm, 4.1% for AAA from 6.1 cm to 7.0 cm, and 6.3% for AAA > 7.0 cm. Level of evidence 2b.
Smoking Habits vary worldwide...


<table>
<thead>
<tr>
<th>Rank (highest to lowest)</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Determinants of health</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smoking, % of population aged ≥15 y who smoke daily</td>
<td>France 22.4</td>
<td>Germany 20.9</td>
<td>CHE 20.4</td>
<td>NLD 19</td>
<td>Japan 18.2</td>
<td>Denmark 17</td>
<td>UK 16.1</td>
<td>Canada 14</td>
<td>Australia 12.4</td>
<td>US 11.4</td>
<td>Sweden 11.2</td>
<td>16.6</td>
</tr>
<tr>
<td>Alcohol consumption, L per capita in population aged ≥15 y</td>
<td>France 11.9</td>
<td>Germany 11</td>
<td>Australia 9.7</td>
<td>UK 9.5</td>
<td>CHE 9.5</td>
<td>Denmark 9.4</td>
<td>US 8.8</td>
<td>Canada 8.1</td>
<td>NLD 8</td>
<td>Sweden 7.2</td>
<td>Japan 7.2</td>
<td>9.1</td>
</tr>
<tr>
<td>Obese or overweight, % of population aged ≥15 y</td>
<td>US 70.1</td>
<td>Australia 63.4</td>
<td>UK 62.9</td>
<td>Canada 60.3</td>
<td>Germany 60</td>
<td>France 49</td>
<td>Sweden 48.3</td>
<td>NLD 47.4</td>
<td>Denmark 47.4</td>
<td>CHE 41.9</td>
<td>Japan 23.8</td>
<td>55.6</td>
</tr>
<tr>
<td>Life expectancy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Life expectancy in total population at birth, mean, y</td>
<td>Japan 83.9</td>
<td>CHE 83</td>
<td>Australia 82.5</td>
<td>France 82.4</td>
<td>Sweden 82.3</td>
<td>Canada 81.7</td>
<td>NLD 81.6</td>
<td>UK 81</td>
<td>Denmark 80.8</td>
<td>Germany 80.7</td>
<td>US 78.8</td>
<td>81.7</td>
</tr>
<tr>
<td>Health-adjusted life expectancy, mean, y</td>
<td>Japan 74.9</td>
<td>CHE 73.1</td>
<td>France 72.6</td>
<td>Sweden 72.3</td>
<td>NLD 72.2</td>
<td>Sweden 72</td>
<td>Australia 71.9</td>
<td>UK 71.4</td>
<td>Germany 71.3</td>
<td>Denmark 71.2</td>
<td>US 69.1</td>
<td>72</td>
</tr>
</tbody>
</table>


We recommend smoking cessation to reduce the risk of AAA growth and rupture.  
Level of recommendation: Strong  
Quality of evidence: Moderate

Recommendation. Physicians should strongly recommend that patients give up smoking, particularly after treatment for an AAA. Level of evidence 2a/recommendation grade A.
We suggest not administering statins, doxycycline, roxithromycin, ACE-inhibitors, or angiotensin receptor blockers for the sole purpose of reducing the risk of AAA expansion and rupture.

**Level of recommendation**  
Weak

**Quality of evidence**  
Low

**Recommendation.** If there are no contraindications, it is strongly recommended that patients with AAA and cardiovascular comorbidities receive statins for cardiovascular protection. Level of evidence 2a/recommendation grade A.

**Recommendation.** Preprocedural initiation of statin therapy should be considered in patients undergoing vascular surgery, ideally at least 2 weeks before the intervention. Level of evidence 2a/recommendation grade B.

**Recommendation.** It is strongly recommended not to treat small AAAs with doxycycline. Level of evidence 2b/recommendation grade A.
**Recommendation.** Perpendicular measurement at right angles to the longitudinal vessel axis is the leading-edge method and is strongly recommended for ultrasound screening. Level of evidence 3b/recommendation grade A.

We suggest that the maximum aneurysm diameter derived from CT imaging should be based on an outer-wall to outer-wall measurement perpendicular to the path of the aorta.

<table>
<thead>
<tr>
<th>Level of recommendation</th>
<th>Quality of evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good Practice Statement</td>
<td>Ungraded</td>
</tr>
</tbody>
</table>
Preoperative Risk Assessment

Good clinical practice in clarifying cardiac risk

- cardiac risk assessment using the revised cardiac risk index (RCRI),
- determination of brain natriuretic peptide (BNP) or N-terminal pro-brain natriuretic peptide (NT-proBNP) in cardiac high risk patients (exercise tolerance <4 metabolic equivalents, MET, revised cardiac risk index, RCRI >1),
- 12-lead electrocardiograph (ECG) for anamnestic conspicuous or cardiac symptomatic patients,
- non-invasive cardiac stress tests in patients with ≥3 clinical risk factors and limited (<4 MET) exercise capacity,
- preoperative coronary angiography in patients with proven myocardial ischemia,
- preoperative echocardiography in newly diagnosed dyspnea of unknown origin or in unknown heart failure and worsening of symptoms within the last 12 months.

Pulmonary risk

Recommendation. A preprocedural lung function test should be performed in patients with suspected pulmonary disease. Level of evidence 3b/recommendation grade B.

Renal risk

Recommendation. In patients with impaired renal function receiving endovascular AAA treatment, preinterventional and postinterventional hydration are strongly recommended to avoid contrast-related nephropathy. Level of evidence 1b/recommendation grade A.

Deutsche Gesellschaft für Anaesthesiologie und Intensivmedizin (2017)
We recommend elective repair for the patient at low or acceptable surgical risk with a fusiform AAA that is ≥ 5.5 cm.

Level of recommendation: Strong
Quality of evidence: High

We suggest elective repair for the patient who presents with a saccular aneurysm.

Level of recommendation: Weak
Quality of evidence: Low

We suggest repair in women with abdominal aortic aneurysm between 5.0 cm and 5.4 cm in maximum diameter.

Level of recommendation: Weak
Quality of evidence: Moderate

Patients with an infrarenal or juxtarenal AAA ≥ 5.5 cm are strongly recommended to undergo elective interventions. Level of evidence 1a/recommendation grade A.

Patients with an infrarenal or juxtarenal AAA of 5.0–5.4 cm can be considered for elective intervention. Level of evidence 3b/recommendation grade 0.

Invasive interventions should be considered for women when the maximum AAA diameter has reached 5.0 cm. Level of evidence 3b/recommendation grade B.

Regardless of AAA diameter, if the growth rate is >10 mm/year, an open repair (OR) or endovascular aortic aneurysm repair (EVAR) intervention is indicated and strongly recommended. Level of evidence 1a/recommendation grade A.
We recommend informing patients contemplating open repair or EVAR of their VQI perioperative mortality risk score.

Level of recommendation: Weak
Quality of evidence: Low

**Recommendation.** For patients with acceptable periprocedural risk, EVAR or OR are equally recommendable, assuming anatomical feasibility for EVAR. Level of evidence 1a/recommendation grade A.

**Recommendation.** Patient preference should strongly be considered when selecting the interventional procedure, taking into account differences between EVAR and OR in the periprocedural course, re-intervention frequency, follow-up and long-term aneurysm-related mortality. Level of evidence 1a/recommendation grade A.
**Recommendation.** Since perioperative hypothermia can impair the surgical result and negatively influence the postoperative course, it is strongly recommended to actively prevent hypothermia. Level of evidence 2a/recommendation grade A.

**Recommendation.** To expedite secondary care it is strongly recommended that acetylsalicylic acid (ASA) be perioperatively continued in AAA patients. Discontinuation should only take place based on individual risk assessment. Level of evidence 3a/recommendation grade A.

**Recommendation.** When greater blood loss is anticipated during AAA interventions, it is strongly recommended that blood management be implemented, including automated autotransfusion. Level of evidence 2a/recommendation grade A.

**Recommendation.** Based on an individual benefit-risk assessment, combining general with epidural anesthesia may be considered in open elective AAA repair. Level of evidence 3a/recommendation grade 0.

**Recommendation.** Postoperatively, the AAA patient treated by OR should be moved to an intermediate care (IMC) or intensive care unit (ICU). Level of evidence 4/recommendation grade B.

We suggest that elective OSR for AAA be performed at centers with an annual volume of at least 10 open aortic operations of any type and a documented perioperative mortality of 5% or less.

<table>
<thead>
<tr>
<th>Level of recommendation</th>
<th>Weak</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality of evidence</td>
<td>Low</td>
</tr>
</tbody>
</table>

We suggest that elective EVAR be performed at centers with a volume of at least 10 EVAR cases each year and a documented perioperative mortality and conversion rate to OSR of 2% or less.

<table>
<thead>
<tr>
<th>Level of recommendation</th>
<th>Weak</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality of evidence</td>
<td>Low</td>
</tr>
</tbody>
</table>

**Recommendation.** It is strongly recommended that AAA be treated in specialized centers. Level of evidence 2a/recommendation grade A.

**Recommendation.** If possible it is strongly recommended that patients with rAAA be treated in specialized, high quality centers; however, variance in geographic conditions influencing transport time, and in local practice and expertise, make it impossible to universally call for the transfer of rAAA patients to centers of excellence. Level of evidence 2a/recommendation grade A.
We recommend a retroperitoneal approach for patients requiring open surgical repair of an inflammatory aneurysm, horseshoe kidney, or an aortic aneurysm in the presence of a hostile abdomen.

Level of recommendation: Strong  
Quality of evidence: Low

We suggest a retroperitoneal exposure or a transperitoneal approach with a transverse abdominal incision for patients with significant pulmonary disease requiring open surgical repair.

Level of recommendation: Weak  
Quality of evidence: Low
**Recommendation.** The choice of surgical approach (transperitoneal or retroperitoneal) should be left to the surgeon. For inflammatory aneurysms, patients with horseshoe kidneys, and aneurysms with abdominal adhesions, a retroperitoneal approach is strongly recommended. Level of evidence 4/recommendation grade A.

**Recommendation.** To avoid incisional hernias, the transverse instead of vertical approach may be considered for OR. Level of evidence 3b/recommendation grade 0.

**Recommendation.** Prophylactic sublay mesh reinforcement after open AAA repair via midline laparotomy is safe and effectively prevents the high prevalence of incisional herniation after surgery. This technique should be employed. Level of evidence 1b/recommendation grade B.
Prevention of incisional hernia with prophylactic onlay and sublay mesh reinforcement versus primary suture only in midline laparotomies (PRIMA): 2-year follow-up of a multicentre, double-blind, randomised controlled trial

An P Jaarman*, Lucas Timmermans*, Hasan H Eker, Robert E G J M Pienk, David van Kleef, Ewout W Steyerberg, Reinder Timman, Arie van der Ham, Imro Daalman, Jan A Charbon, Christoph Schuhmacher, André Mihaljevic, Jakob R Liebiki, Panagiotis Fiketas, Philip Knebel, René H Fortelny, Gert-Jan Kleineveld, Johan F Lange, Hans J Jeekel, for the PRIMA Trialist Group†

<table>
<thead>
<tr>
<th>Test</th>
<th>Incidence (%)</th>
<th>Odds ratio (95% CI)</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>All patients with follow-up to 2 years (n=480)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary mesh reinforcement vs primary suture*</td>
<td>59/373 (16%) vs 33/107 (30%)</td>
<td>0.45 (0.27-0.77)</td>
<td>0.003</td>
</tr>
<tr>
<td>Onlay mesh reinforcement vs primary suture*</td>
<td>25/188 (13%) vs 33/107 (30%)</td>
<td>0.37 (0.20-0.69)</td>
<td>0.0016</td>
</tr>
<tr>
<td>Sublay mesh reinforcement vs primary suture*</td>
<td>34/185 (18%) vs 33/107 (30%)</td>
<td>0.55 (0.30-1.00)</td>
<td>0.05</td>
</tr>
<tr>
<td>Onlay mesh reinforcement vs sublay mesh reinforcement†</td>
<td>25/188 (13%) vs 34/185 (18%)</td>
<td>1.39 (0.73-2.65)</td>
<td>0.31</td>
</tr>
<tr>
<td>Abdominal aortic aneurysm (n=150)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary mesh reinforcement vs primary suture*</td>
<td>20/113 (17%) vs 16/37 (43%)</td>
<td>0.29 (0.12-0.67)</td>
<td>0.004</td>
</tr>
<tr>
<td>Onlay mesh reinforcement vs primary suture*</td>
<td>10/61 (16%) vs 16/37 (43%)</td>
<td>0.27 (0.10-0.71)</td>
<td>0.008</td>
</tr>
<tr>
<td>Sublay mesh reinforcement vs primary suture*</td>
<td>10/52 (19%) vs 16/37 (43%)</td>
<td>0.36 (0.13-0.93)</td>
<td>0.03</td>
</tr>
<tr>
<td>Onlay mesh reinforcement vs sublay mesh reinforcement†</td>
<td>10/61 (16%) vs 10/52 (19%)</td>
<td>1.04 (0.32-3.39)</td>
<td>0.95</td>
</tr>
</tbody>
</table>
We recommend surveillance during the first year after EVAR using contrast enhanced CT at one month and in the absence of an endoleak or sac enlargement, contrast enhanced CT or color duplex sonographic imaging at 12 months.

Level of recommendation: Strong
Quality of evidence: Moderate

**Recommendation.** After OR, patients should undergo CT control at 5-year intervals. Level of evidence 4/recommendation grade 0.

**Recommendation.** After EVAR, ultra-regular postprocedural follow-up should be organized by the vascular center that carried out the implantation. Level of evidence 3/recommendation grade B.
Conclusions...

"Just how many ways are there to skin a cat?"
1955: r AAA

Albert Einstein:
“I want to go when I want. It is tasteless to prolong life artificially. I have done my share, it is time to go. I will do it elegantly.”
European Society for Vascular Surgery presents
ESVS Masterclass live

Scientific Coordinator: Alison Halliday
Scientific Organization: Christian-Alexander Behrendt, Eike Sebastian Debus, Holger Diener

Speakers:
- Ross Naylor, Leicester
- Martin Björck, Uppsala
- Hans-Henning Eckstein, Munich
- Gert-Jan de Borst, Utrecht
and many more

esvs

ESVS 33rd Annual Meeting
24–27 September 2019

Leading Science—Knowledge—Education

Messe Halls, Hamburg, Germany
Save the date to join the leading scientific vascular meeting in Europe!
Submit your abstract by 1 April 2019

www.esvs.org