

# Odporúčania ESC/ESVS 2017 pre diagnostiku a liečbu periférnych artériových ochorení



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# **2017 ESC Guidelines on the Diagnosis and Treatment of Peripheral Arterial Diseases, in collaboration with the European Society for Vascular Surgery (ESVS)**

**Document covering atherosclerotic disease of extracranial carotid and vertebral, mesenteric, renal, upper and lower extremity arteries**

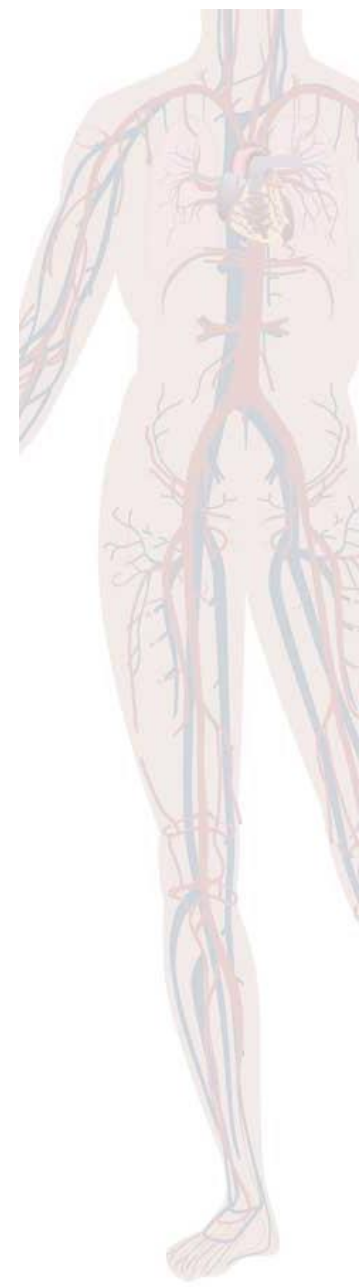
**Endorsed by: the European Stroke Organization (ESO)**

**The Task Force for the Diagnosis and Treatment of Peripheral Arterial Diseases of the European Society of Cardiology (ESC) and of the European Society for Vascular Surgery (ESVS)**

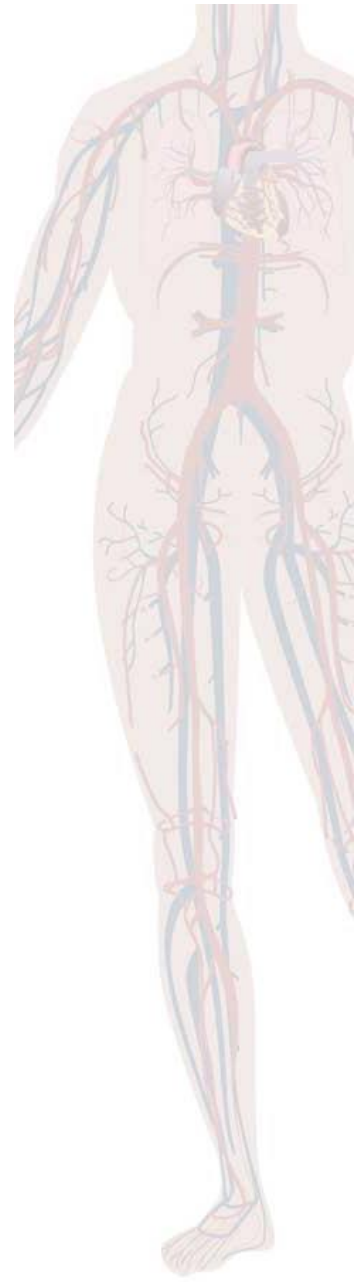


# Periférne artériové obliterujúce ochorenie – PAO

- **Širšia definícia PAO:** aterosklerotické postihnutie extrakraniálnych karotických a vertebrálnych artérií, mezenterických, renálnych artérií a artérií horných a dolných končatín – **všetkých arteriálnych riečísk okrem koronárnych artérií a aorty**



# Antitrombotická liečba





# Antitrombotická liečba u pacientov s PAO DK

- Dlhodobá monoantiagregačná liečba je odporúčaná u **symptomatických pacientov**
  - U pacientov s potrebou antitrombotickej liečby **môže byť klopido­grel preferovaný pred ASA**
  - **Duálna antiagregačná liečba s ASA + klopido­grel minimálne na 1 mesiac** má byť zvážená u pacientov po infra-inguinálnej implantácii **stentu**
  - Vzhľadom k nedostatočne potvrdenému efektu nie je rutinne indikovaná antitrombotická liečba u pacientov s **izolovanou asymptomatickou formou PAO DK**
- 
- **Warfarin** môže byť zvážený u pacienta po infrainguinálnom bypasse s použitím autoló­gnej vény
  - **Duálna antiagregačná liečba s ASA + klopido­grel** môže byť zvážená u pacienta po infra­popliteálnom bypasse s protetickým graftom





# Antitrombotická liečba u pacientov s PAO DK a potrebou antikoagulácie

## Antithrombotic therapy for PADs patients requiring oral anticoagulant

In patients with PADs and AF, OAC:<sup>83,90</sup>

- is recommended when the CHA<sub>2</sub>DS<sub>2</sub>-VASc score is  $\geq 2$
- should be considered in all other patients.

In patients with PADs who have an indication for OAC (e.g. AF or mechanical prosthetic valve), oral anticoagulants alone should be considered.<sup>91</sup>

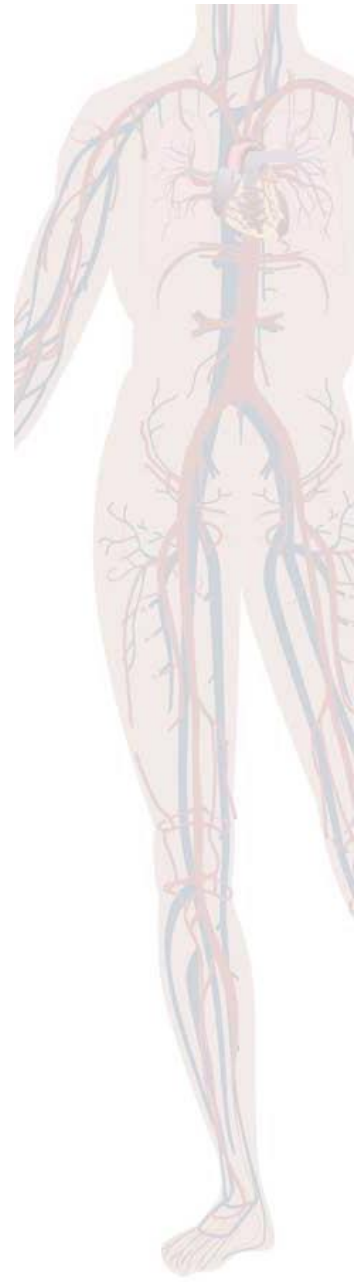
After endovascular revascularization, aspirin or clopidogrel should be considered in addition to OAC for at least 1 month if the bleeding risk is low compared with the risk of stent/graft occlusion.

After endovascular revascularization, OAC alone should be considered if the bleeding risk is high compared with the risk of stent/graft occlusion.

OAC and SAPT may be considered beyond 1 month in high ischaemic risk patients or when there is another firm indication for long-term SAPT.

|     |   |
|-----|---|
| I   | A |
| IIa | B |
| IIa | B |
| IIa | C |
| IIa | C |
| IIb | C |

# Karotické artérie





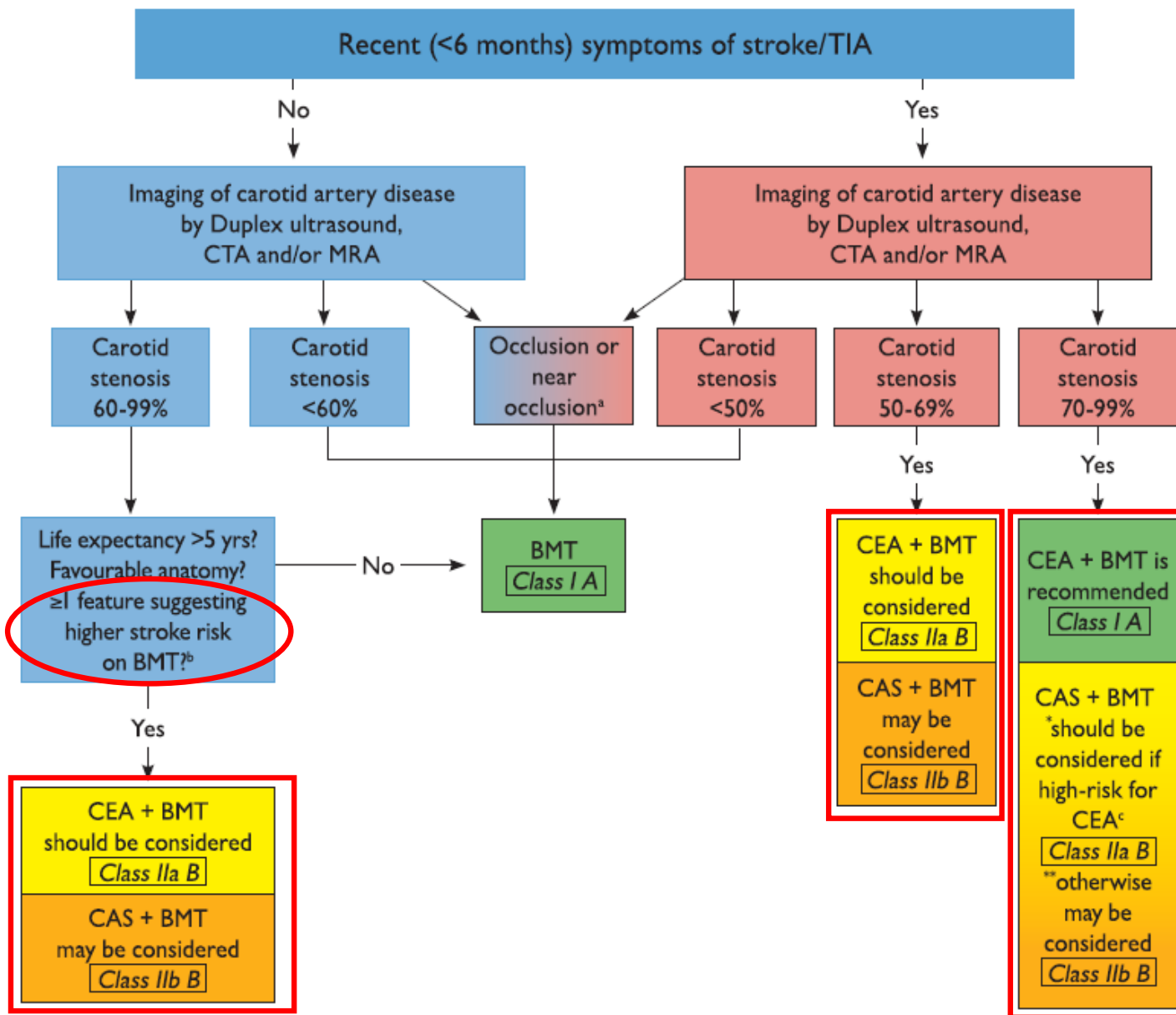
# Charakteristiky spojené so zvýšeným rizikom CMP u pacientov s asympt. karotickou stenózou

- So zlepšovaním prognózy pri súčasnej optimálnej medikamentóznej liečby je **manažment asymptomatických karotických stenóz kontroverzný**
- **Individuálne stanovenie periprocedurálneho rizika komplikácií po CAS/CEA určuje výber liečebného postupu**

|                       |                                                                                                                                                                                                                                                                                                                                   |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Clinical <sup>a</sup> | • Contralateral TIA/stroke <sup>121</sup>                                                                                                                                                                                                                                                                                         |
| Cerebral imaging      | • Ipsilateral silent infarction <sup>122</sup>                                                                                                                                                                                                                                                                                    |
| Ultrasound imaging    | • Stenosis progression (> 20%) <sup>123</sup><br>• Spontaneous embolization on transcranial Doppler (HITS) <sup>124</sup><br>• Impaired cerebral vascular reserve <sup>125</sup><br>• Large plaques <sup>b126</sup><br>• Echolucent plaques <sup>96</sup><br>• Increased juxta-luminal black (hypoechoogenic) area <sup>127</sup> |
| MRA                   | • Intraplaque haemorrhage <sup>128</sup><br>• Lipid-rich necrotic core                                                                                                                                                                                                                                                            |



# Manažment extrakraniálnych karotických stenóz



## c) Zvýšené riziko CEA:

- vek > 80 rokov
- klinicky závažná kardiálne ochorenie
- závažné pľúcne ochorenie
- kontralaterálna karotická oklúzia
- kontralaterálne postihnutie n.laryngeus recurens
- predchádzajúci chir. výkon v oblasti krku
- rádioterapia v oblasti krku
- restenóza po CEA

Individuálne zvažovanie CAS/CEA podľa charakteru stenózy, komorbidít pacienta a skúseností a výsledkov pracoviska



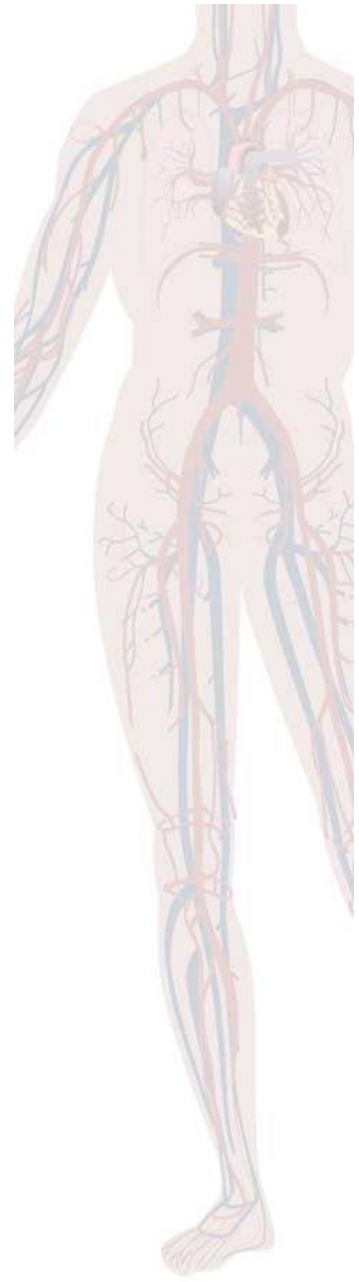
# Vertebrálne artérie

## Recommendations for management of vertebral artery stenoses

| Recommendations                                                                                                                                                                                                                                | Class <sup>a</sup> | Level <sup>b</sup> |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------------|
| In patients with symptomatic extracranial vertebral artery stenoses, revascularization may be considered for lesions $\geq 50\%$ in patients with <u>recurrent ischaemic events despite optimal medical management.</u> <sup>159,160,162</sup> | <b>IIb</b>         | <b>B</b>           |
| Revascularization of asymptomatic vertebral artery stenosis is not indicated, irrespective of the degree of severity.                                                                                                                          | <b>III</b>         | <b>C</b>           |

**Stenózy vertebrálnych artérií sú liečené vo väčšine prípadov medikamentózne s výnimkou pacientov s rekurenciou symptomatológie napriek optimálnej medikamentóznej liečbe (IIbB)**

# Mezenteriálna ischemia





# Mezenteriálne artérie

- **Akútna mezenteriálna ischémia – urgentné CT**
  - **embolická** – endovaskulárne a chirurgické riešenie podobné výsledky
  - **trombotická** – EVL
- **Chronická mezenteriálna ischémia – DUS**
  - pri stenóze/oblit. viacerých tepien
  - revaskularizácia s možnosťou EVL aj chir.postupu

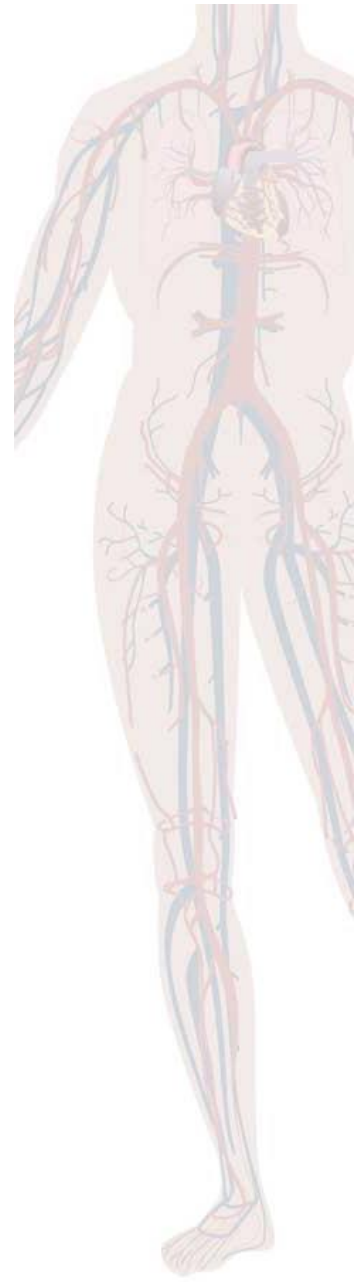
## Akútna mezenteriálna ischémia

| Diagnosis                                                                                                                                                                                                      |     |   |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|---|
| In patients with suspected acute mesenteric ischaemia, urgent <b>CTA</b> is recommended. <sup>179</sup>                                                                                                        | I   | C |
| In patients with suspicion of acute mesenteric ischaemia, the measurement of D-dimer should be considered to rule out the diagnosis. <sup>177–179</sup>                                                        | IIa | B |
| Treatment                                                                                                                                                                                                      |     |   |
| In patients with acute <u>thrombotic occlusion</u> of the superior mesenteric artery, <u>endovascular therapy</u> should be considered as first-line therapy for revascularization. <sup>182,184,187,188</sup> | IIa | B |
| In patients with acute <u>embolic occlusion</u> of the superior mesenteric artery, both endovascular and open surgery therapy should be considered. <sup>182,184,187,188</sup>                                 | IIa | B |

## Chronická mezenteriálna ischémia

| Diagnosis                                                                                                                                                                                                       |     |   |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|---|
| In patients with suspected CMI, <b>DUS</b> is recommended as the first-line examination. <sup>193,194</sup>                                                                                                     | I   | C |
| In patients with suspected CMI, occlusive disease of a <u>single mesenteric artery</u> makes the diagnosis <u>unlikely</u> and a careful search for alternative causes should be considered. <sup>192,203</sup> | IIa | C |
| Treatment                                                                                                                                                                                                       |     |   |
| In patients with <u>symptomatic multivessel</u> CMI, revascularization is recommended. <sup>192,195</sup>                                                                                                       | I   | C |
| In patients with symptomatic multivessel CMI, it is not recommended to delay revascularization in order to improve the nutritional status. <sup>192,195</sup>                                                   | III | C |

# Renálne artérie



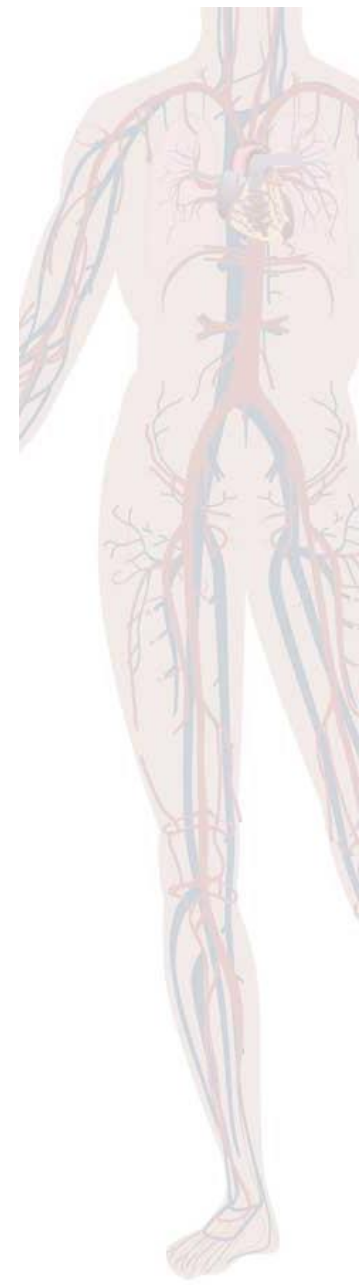


# Renálne artérie

- Renálna revaskularizácia väčšinou nezlepší krvný tlak, renálne parametre alebo KVS parametre u pacientov s ATS stenózou
- Renálna revaskularizácia je odporúčaná v špecifických situáciách:
  - RAS s pľúcnym edémom alebo akútnym SZ so zachovanou systol.funkciou ĽK
  - RAS pri akútnom oligo-anurickom renálnom zlyhávaní u pacientov s bilaterálnou RAS bez obličkovej atrofie
  - **Cave: stenóza solitárnej obličky, bilaterálna stenóza!**

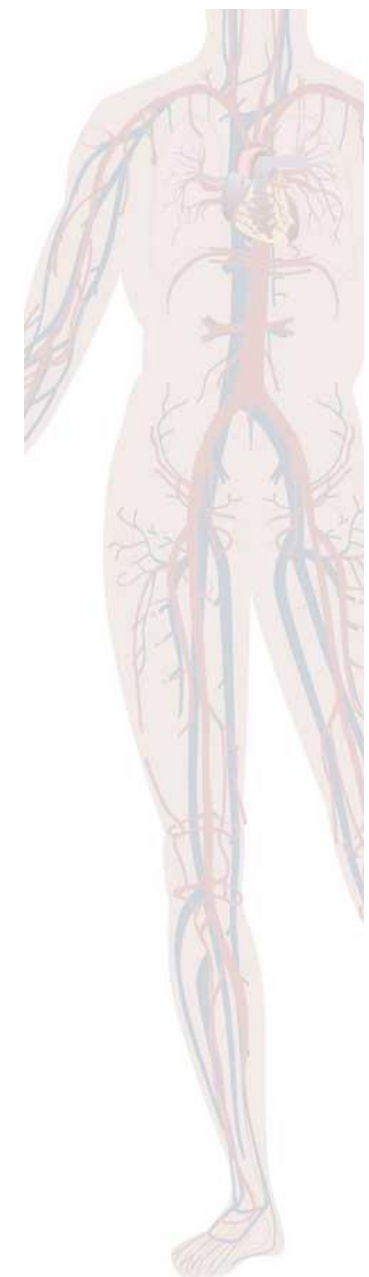
| Revascularization                                                                                                                                                                                                                                    |     |   |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|---|
| Routine revascularization is not recommended in RAS secondary to atherosclerosis. <sup>229,231,232</sup>                                                                                                                                             | III | A |
| In cases of hypertension and/or signs of renal impairment related to renal arterial fibromuscular dysplasia, balloon angioplasty with bailout stenting should be considered. <sup>234–236</sup>                                                      | IIa | B |
| Balloon angioplasty, with or without stenting, may be considered in selected patients with RAS and unexplained recurrent congestive heart failure or sudden pulmonary oedema. <sup>229,237,238</sup>                                                 | IIb | C |
| In the case of an indication for revascularization, surgical revascularization should be considered for patients with complex anatomy of the renal arteries, after a failed endovascular procedure or during open aortic surgery. <sup>241–243</sup> | IIa | B |

# PAO DK



# PAO DK

| Recommendations                                                                                                                                                                | Class <sup>a</sup> | Level <sup>b</sup> |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------------|
| DUS is indicated as a first-line imaging method to confirm LEAD lesions. <sup>253</sup>                                                                                        | I                  | C                  |
| DUS and/or <u>CTA and/or MRA</u> are indicated for anatomical characterization of LEAD lesions and <u>guidance for optimal revascularization strategy</u> . <sup>254–257</sup> | I                  | C                  |
| Data from an anatomical imaging test should always be analysed in conjunction with symptoms and haemodynamic tests prior to a treatment decision. <sup>246</sup>               | I                  | C                  |
| DUS screening for AAA should be considered. <sup>258,259</sup>                                                                                                                 | IIa                | C                  |

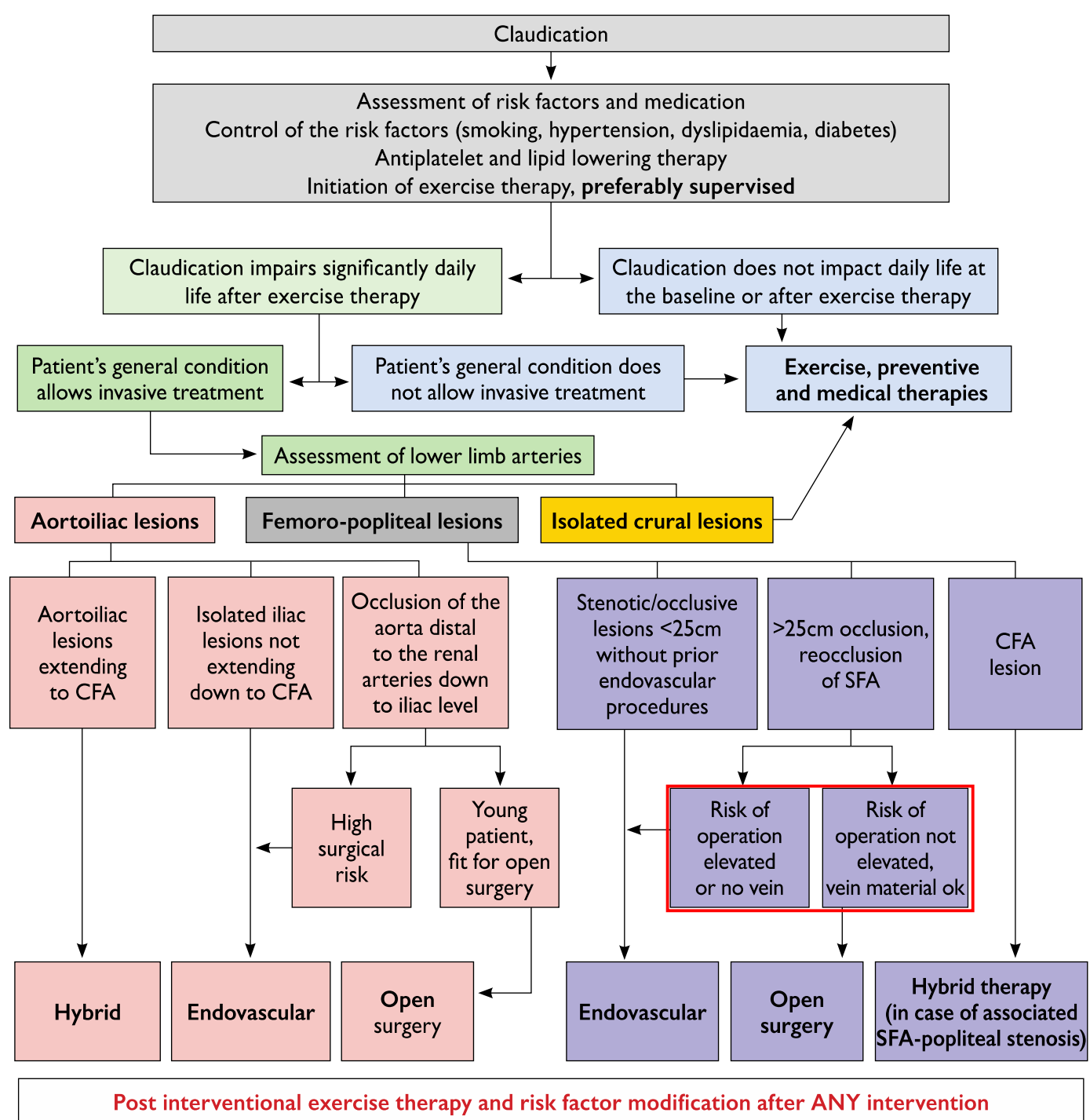


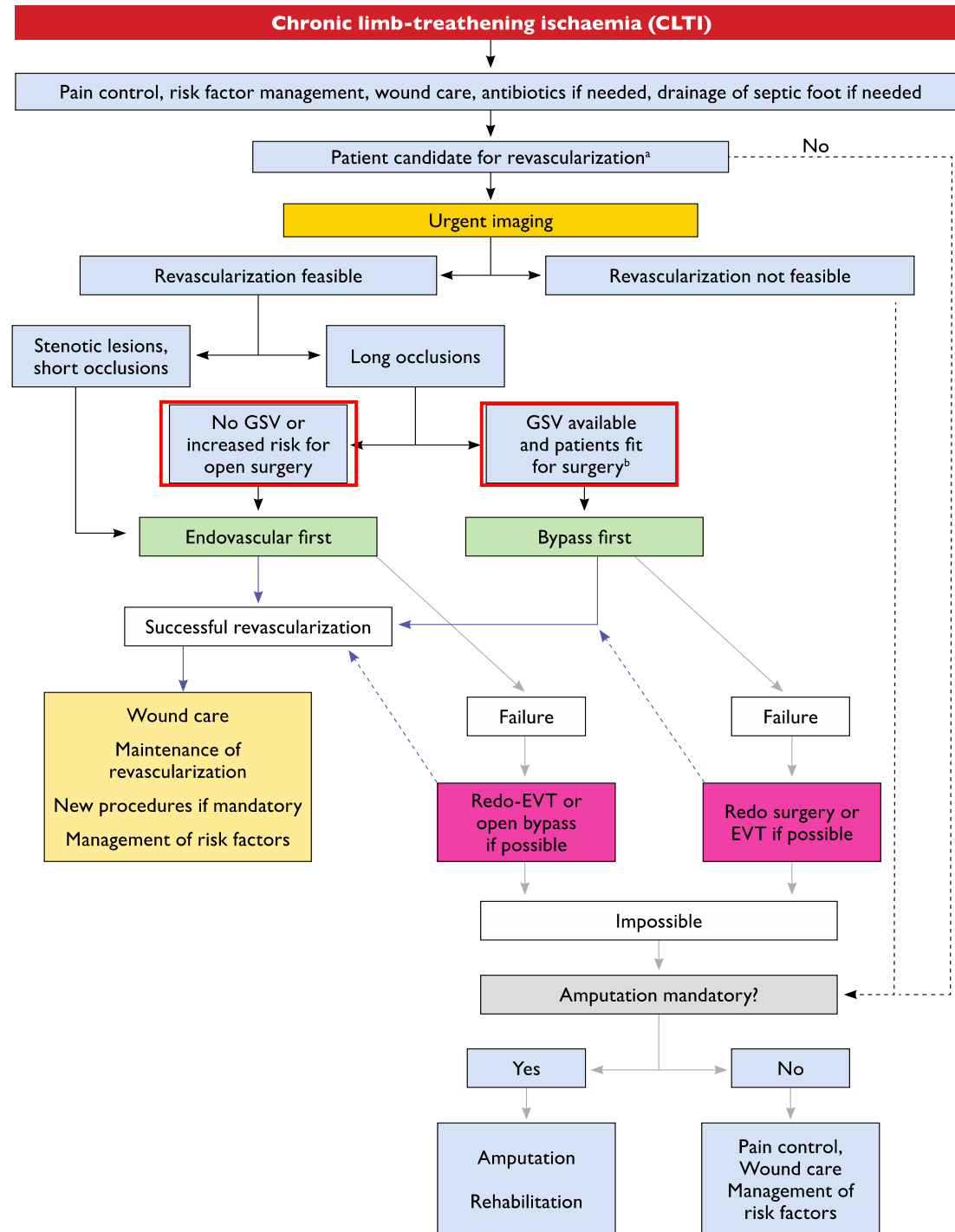


# PAO DK – klaudikačné štádium

## Recommendations for the management of patients with intermittent claudication

| Recommendations                                                                                                                                                | Class <sup>a</sup> | Level <sup>b</sup> |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------------|
| On top of general prevention, <u>statins are indicated to improve walking distance</u> . <sup>30,278</sup>                                                     | I                  | A                  |
| In patients with intermittent claudication:                                                                                                                    |                    |                    |
| • supervised <u>exercise training</u> is recommended <sup>273,287–289</sup>                                                                                    | I                  | A                  |
| • unsupervised exercise training is recommended when supervised exercise training is not feasible or available.                                                | I                  | C                  |
| When daily life activities are compromised despite exercise therapy, revascularization should be considered.                                                   | IIa                | C                  |
| <u>When daily life activities are is severely compromised, revascularization</u> should be considered in association with exercise therapy. <sup>288,290</sup> | IIa                | B                  |







# WIFI klasifikácia – riziko amputácie u pacientov s CLI



## • Cieľová populácia pre WIFI klasifikáciu

- pokojová ischemická bolesť s objektívnymi hemodynamickými parametrami CLI (ABI<0.4, členkový tlak<50mmHg, palcový tlak <30mmHg, tcpO<sub>2</sub><30mmHg)
- diabetický defekt
- nehojaci sa defekt alebo ulcerácia ≥2 týždne
- gangréna nohy alebo DK

**W – wound (0-3)**

**I – ischemia (0-3)**

**fl – foot infection (0-3)**

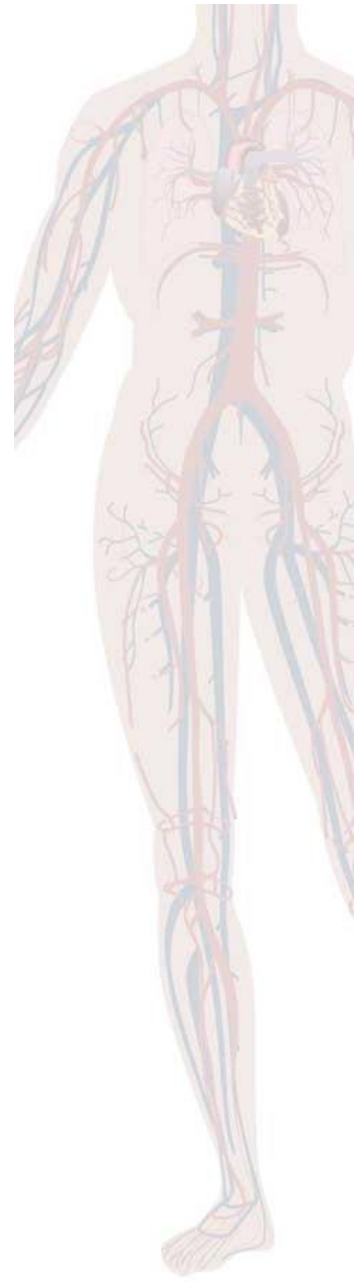
| Component                     | Score | Description                                                                                           |
|-------------------------------|-------|-------------------------------------------------------------------------------------------------------|
| <b>W</b><br>(Wound)           | 0     | No ulcer (ischaemic rest pain)                                                                        |
|                               | 1     | Small, shallow ulcer on distal leg or foot without gangrene                                           |
|                               | 2     | Deeper ulcer with exposed bone, joint or tendon ± gangrenous changes limited to toes                  |
|                               | 3     | Extensive deep ulcer; full thickness heel ulcer ± calcaneal involvement ± extensive gangrene          |
| <b>I</b><br>(Ischaemia)       |       | ABI                      Ankle pressure (mmHg)                      Toe pressure or TcPO <sub>2</sub> |
|                               | 0     | ≥0.80                      > 100                      ≥60                                             |
|                               | 1     | 0.60–0.79                      70–100                      40–59                                      |
|                               | 2     | 0.40–0.59                      50–70                      30–39                                       |
|                               | 3     | <0.40                      <50                      <30                                               |
| <b>fl</b><br>(foot Infection) | 0     | No symptoms/signs of infection                                                                        |
|                               | 1     | Local infection involving only skin and subcutaneous tissue                                           |
|                               | 2     | Local infection involving deeper than skin/subcutaneous tissue                                        |
|                               | 3     | Systemic inflammatory response syndrome                                                               |

Example: A 65-year-old male diabetic patient with gangrene of the big toe and a <2 cm rim of cellulitis at the base of the toe, without any clinical/biological sign of general infection/inflammation, whose toe pressure is at 30 mmHg would be classified as Wound 2, Ischaemia 2, foot Infection 1 (WIFI 2-2-1). The clinical stage would be 4 (high risk of amputation). The benefit of revascularization (if feasible) is high, also depending on infection control.

**Odhad rizika amputácie podľa WIFI klasifikácie**

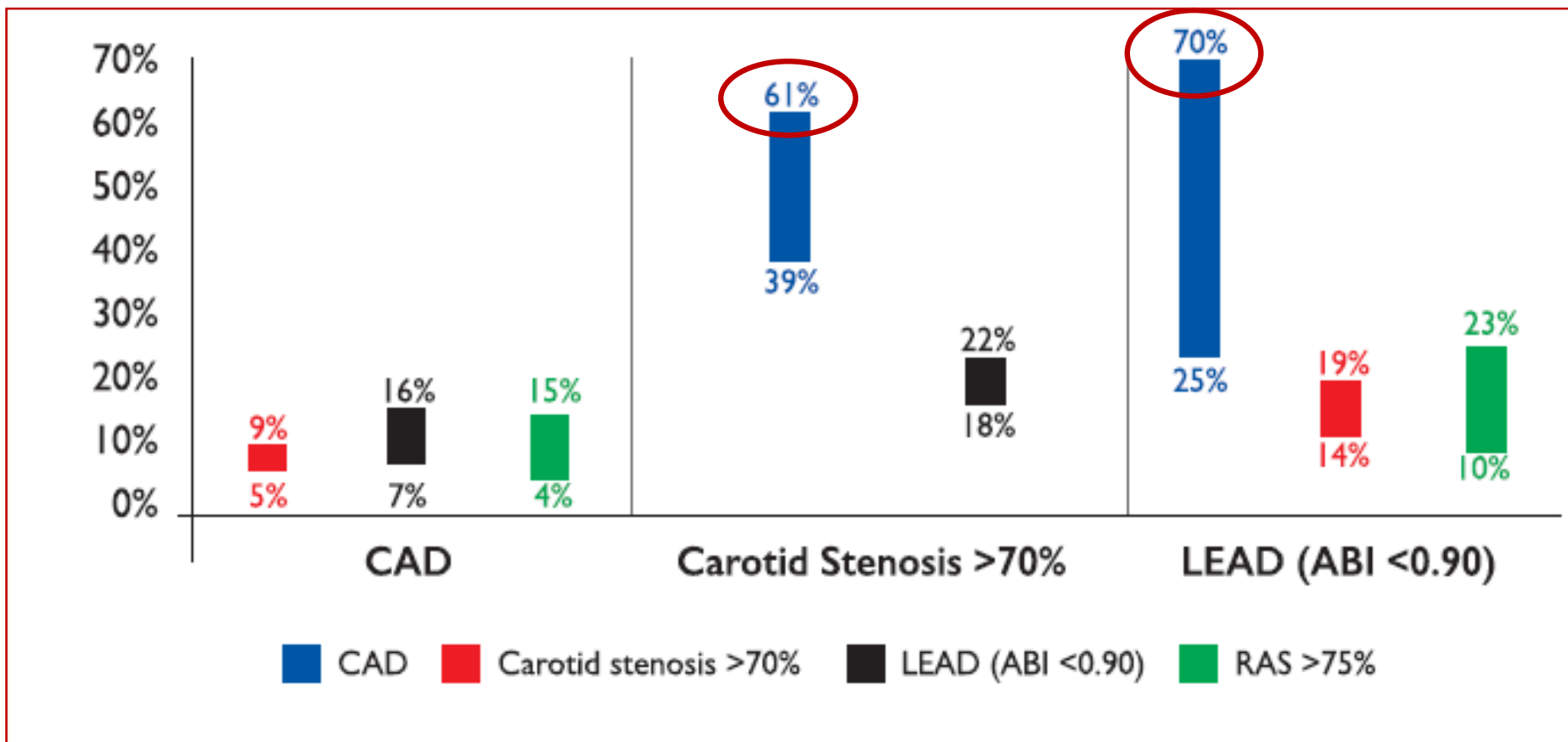
|     | Ischaemia – 0 |      |      |      | Ischaemia – 1 |      |      |      | Ischaemia – 2 |      |      |      | Ischaemia – 3 |      |      |      |
|-----|---------------|------|------|------|---------------|------|------|------|---------------|------|------|------|---------------|------|------|------|
| W-0 | VL            | VL   | L    | M    | VL            | L    | M    | H    | L             | L    | M    | M    | L             | M    | M    | H    |
| W-1 | VL            | VL   | L    | M    | VL            | L    | M    | H    | L             | M    | H    | H    | M             | M    | H    | H    |
| W-2 | L             | L    | M    | H    | M             | M    | H    | H    | M             | H    | H    | H    | H             | H    | H    | H    |
| W-3 | M             | M    | H    | H    | H             | H    | H    | H    | H             | H    | H    | H    | H             | H    | H    | H    |
|     | fl-0          | fl-1 | fl-2 | fl-3 | fl-0          | fl-1 | fl-2 | fl-3 | fl-0          | fl-1 | fl-2 | fl-3 | fl-0          | fl-1 | fl-2 | fl-3 |

# Multivaskulárne postihnutie





# Multivaskulárne postihnutie



- Viacetážové arteriálne postihnutie je u pacientov s KCHS prítomné v **10-15%** a u pacientov s PAO DK alebo závažnou karotickou stenózou v **60-70%**

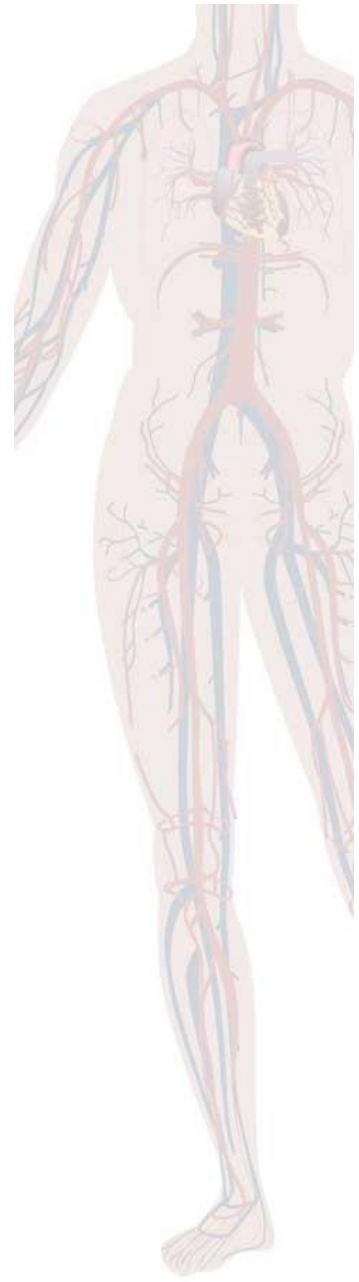


# Manažment karotickej stenózy u pacientov indikovaných na CABG

| Recommendations                                                                                                                                                                                              | Class <sup>a</sup> | Level <sup>b</sup> |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------------|
| It is recommended that the indication (and, if so, the <u>method and timing</u> ) for carotid revascularization be individualized after discussion within a multidisciplinary team, including a neurologist. | I                  | C                  |
| In patients with a recent (<6 months) history of TIA/stroke who are scheduled for CABG:                                                                                                                      |                    |                    |
| <ul style="list-style-type: none"> <li>Carotid revascularization should be considered in patients with <u>50–99%</u> carotid stenosis.<sup>359,360</sup></li> </ul>                                          | IIa                | B                  |
| <ul style="list-style-type: none"> <li>Carotid revascularization with CEA should be considered as the first choice in patients with 50–99% carotid stenosis.<sup>359,360</sup></li> </ul>                    |                    |                    |
| <ul style="list-style-type: none"> <li>Carotid revascularization is not recommended in patients with carotid stenosis &lt;50%.</li> </ul>                                                                    | III                | C                  |

| Recommendations                                                                                                                                                                                                                                                                                                                         | Class <sup>a</sup> | Level <sup>b</sup> |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------------|
| In neurologically asymptomatic patients scheduled for CABG:                                                                                                                                                                                                                                                                             |                    |                    |
| <ul style="list-style-type: none"> <li><u>Routine prophylactic carotid revascularization in patients with a 70–99% carotid stenosis is not recommended.</u><sup>350</sup></li> </ul>                                                                                                                                                    | III                | B                  |
| <ul style="list-style-type: none"> <li>Carotid revascularization may be considered in patients with <u>bilateral</u> <u>70–99%</u> carotid stenoses or 70–99% carotid stenosis + contralateral occlusion.<sup>350</sup></li> </ul>                                                                                                      | IIb                | B                  |
| <ul style="list-style-type: none"> <li>Carotid revascularization may be considered in patients with a 70–99% carotid stenosis in the presence of one or more characteristics that may be associated with an increased risk of ipsilateral stroke<sup>c</sup> in order to reduce stroke risk beyond the perioperative period.</li> </ul> | IIb                | C                  |

# Kardiálne postihnutie u pacientov s PAO





# PAO a SZ

| Recommendations                                                                                                                      | Class <sup>a</sup> | Level <sup>b</sup> |
|--------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------------|
| <b>PADs and heart failure</b>                                                                                                        |                    |                    |
| Full vascular assessment is indicated in all patients considered for heart transplantation or cardiac assist device implantation.    | I                  | C                  |
| In patients with symptomatic PADs, screening for heart failure with TTE and/or natriuretic peptides assessment should be considered. | IIa                | C                  |
| Screening for LEAD may be considered in patients with heart failure.                                                                 | IIb                | C                  |
| Testing for renal artery disease may be considered in patients with flash pulmonary oedema.                                          | IIb                | C                  |

# PAO a chlopňové chyby srdca

|                                                                                                                                        |   |   |
|----------------------------------------------------------------------------------------------------------------------------------------|---|---|
| <b>PADs and valvular heart disease</b>                                                                                                 |   |   |
| Screening for LEAD and UEAD is indicated in patients undergoing TAVI or other structural interventions requiring an arterial approach. | I | C |



# Zmeny v odporúčaniach 2017

| <b>CHANGE IN RECOMMENDATIONS</b>     |                                                         |
|--------------------------------------|---------------------------------------------------------|
| <b>2011</b>                          | <b>2017</b>                                             |
| <b>Carotid Artery Disease</b>        |                                                         |
| <b>EPDs in carotid stenting</b>      |                                                         |
| Asymptomatic 60–99% carotid stenosis |                                                         |
| • Surgery for all                    | • Surgery for high stroke risk <sup>116</sup>           |
| • Stenting as an alternative         | • Stenting in high surgery risk <sup>129, 135-137</sup> |
|                                      | • Stenting in average surgical risk                     |



**I**

**IIa**

**IIb**

**III**



# Zmeny v odporúčaníach 2017

## CHANGE IN RECOMMENDATIONS 2011 2017

### Renal Artery Disease

Stenting for symptomatic atherosclerotic stenosis >60%<sup>229,231,232</sup>

**I**

**IIa**

**IIb**

**III**



## 2017 NEW RECOMMENDATIONS

- Fibromuscular dysplasia: balloon angioplasty with bailout stenting

**I**

**IIa**

**IIb**

**III**

# Zmeny v odporúčaníach 2017

| <b>CHANGE IN RECOMMENDATIONS</b><br><b>2011</b> <b>2017</b>                                              |                       |
|----------------------------------------------------------------------------------------------------------|-----------------------|
| <b>Upper Extremity Artery Disease</b>                                                                    |                       |
| Revascularization for symptomatic subclavian artery stenosis                                             |                       |
| Subclavian stenosis revascularization                                                                    |                       |
| • Endovascular first                                                                                     | • Stenting or surgery |
| Revascularization for asymptomatic subclavian stenosis in patients with/planned for CABG                 |                       |
| <b>All Peripheral Arterial Diseases (PADs)</b>                                                           |                       |
| • Screening for heart failure (BNP, TTE)                                                                 |                       |
| • Stable PADs + other conditions requiring anticoagulants (e.g. AF): anticoagulation alone <sup>91</sup> |                       |

**I**

**IIa**

**IIb**

**III**

# Zmeny v odporúčaniach 2017

| <b>CHANGE IN RECOMMENDATIONS</b><br><b>2011</b> <span style="float: right;"><b>2017</b></span> |                                                                                                            |
|------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|
| <b>Lower Extremity Artery Disease</b>                                                          |                                                                                                            |
| Aorto-iliac lesions                                                                            |                                                                                                            |
| <ul style="list-style-type: none"> <li>• Primary endovascular therapy for "TASC-D"</li> </ul>  | <ul style="list-style-type: none"> <li>• Surgery for aorto-iliac or aorto-bi-femoral occlusions</li> </ul> |
|                                                                                                | <ul style="list-style-type: none"> <li>• Endovascular as an alternative in experienced centres</li> </ul>  |
| Infra-popliteal lesions                                                                        |                                                                                                            |
| <ul style="list-style-type: none"> <li>• Endovascular first</li> </ul>                         | <ul style="list-style-type: none"> <li>• Bypass using GSV</li> </ul>                                       |
|                                                                                                | <ul style="list-style-type: none"> <li>• Endovascular therapy<sup>320-326</sup></li> </ul>                 |
| <div> <div>I</div> <div>IIa</div> <div>IIb</div> <div>III</div> </div>                         |                                                                                                            |

# Zmeny v odporúčaniach 2017

## 2017 NEW RECOMMENDATIONS

### Lower Extremity Artery Disease (LEAD)

- Statins to improve walking distance<sup>30,278</sup>
- LEAD + AF: Anticoagulation if CHADS-VASc >2
- Angiography in CLTI with below-the-knee lesions
- Duplex screening for AAA<sup>258, 259</sup>
- In case of CABG: screen LEAD with ABI, limit vein harvesting if LEAD
- Screening for LEAD in CAD patients<sup>366–368, 375–379</sup>
- Screening for LEAD in HF patients
- Clopidogrel preferred over aspirin<sup>a</sup>
- Antiplatelet therapy in isolated<sup>b</sup> asymptomatic LEAD<sup>66, 67</sup>



**I**

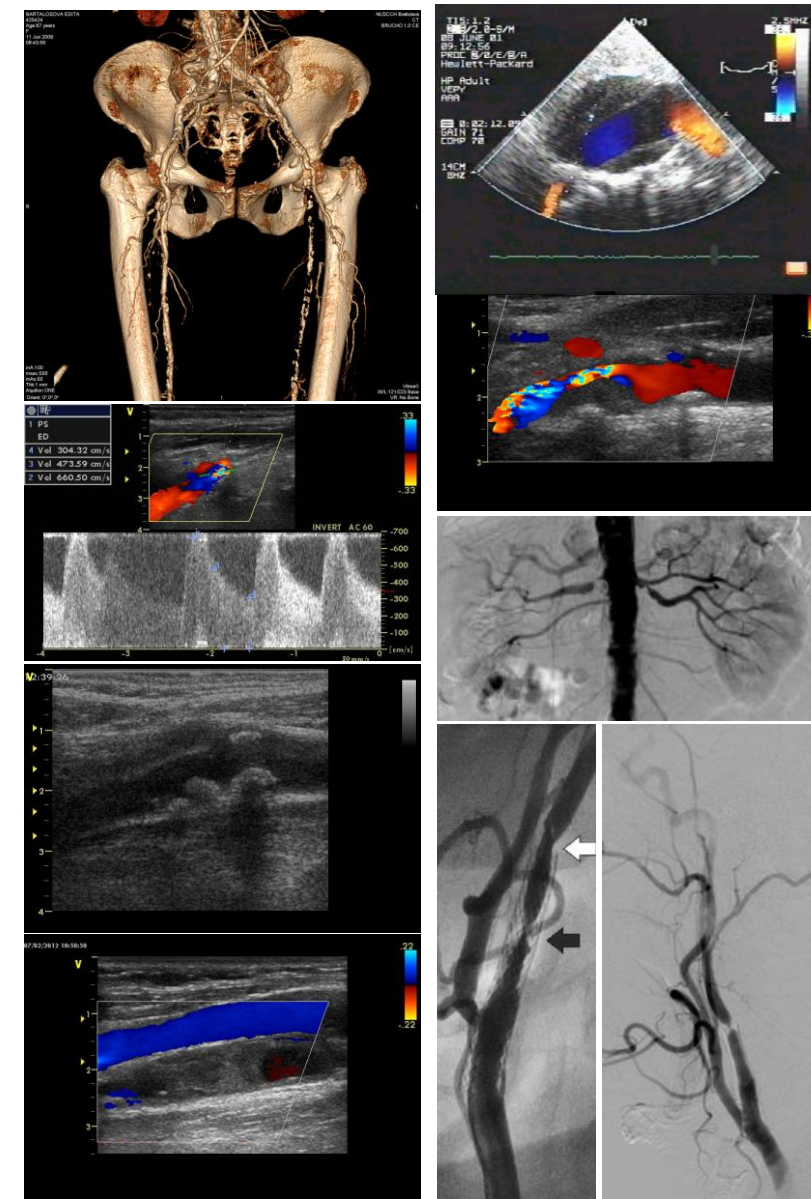
**IIa**

**IIb**

**III**



Ďakujem za pozornosť





# Antitrombotická liečba u pacientov s karotickou stenózou

## Carotid artery disease

In patients with symptomatic carotid stenosis, long-term SAPT is recommended (87).

I

A

DAPT with aspirin and clopidogrel is recommended for at least 1 month after CAS (60).

I

B

In patients with asymptomatic >50% carotid artery stenosis, long-term antiplatelet therapy (commonly low-dose aspirin) should be considered when the bleeding risk is low.<sup>c</sup>

IIa

C