

Confluence Duplex Guidelines

Based on ESVS Carotid Guidelines 2017 and 2023, ASA/ACCF/AANN/SIR/SVS carotid guidelines 2011 and 2022, SVS PAD guidelines 2015 and 2019, SVS AAA guidelines 2017, SVS imaging guidelines 2018, communication with Dr Moneta, various articles

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Carotid disease:

Screening:

Symptomatic (focal hemispheric symptoms, sudden vertigo):

Immediate (current guidelines are for the patient to go to the ER for evaluation and work-up)

NB:

Almost no dizziness is due to cerebrovascular disease. Recommend excellent guidelines from the American Academy of Family Practitioners:

<https://www.aafp.org/pubs/afp/issues/2017/0201/p154.html>

Asymptomatic:

Prevalence of asymptomatic carotid stenosis >70% (when we would think about surgery) is **0.5%** of the general population. Guidelines recommend AGAINST screening the general population.

2 reasons to order a duplex if **no** symptoms are present:

1. To optimize medical management
2. Consider a patient for surgery for stroke risk reduction. If this is the case, then the patient needs to be a good surgical candidate and expected to live at least 5 years

Duplex NOT indicated for bruit alone (VERY low prevalence of a significant carotid stenosis), only if other atherosclerotic risk factors are present

Screening is most cost effective in a **high risk population**.

To make a screening worth the cost of the duplex, the patient should have at least **2** of the following risk factors (preferably more):

Age >60

Hypertension

Coronary artery disease

Current smoking

Peripheral arterial disease

History of a stroke

1st degree relative with a prior stroke

1st degree relative with atherosclerosis before age 60

Surveillance:

Once a stenosis is found in an **asymptomatic** patient:

Follow-up duplexes only indicated if stenosis is >50%

50-69% stenosis: annual, "if stability has been established over an extended period or the patient's candidacy for further intervention has changed, longer intervals or termination of surveillance may be appropriate"

>70% stenosis: every 6 months until stable, then every year (especially if "risk factors" controlled like diabetes and smoking)

After carotid endarterectomy:

Duplex within 3 months of the surgery, then every 6 months x 2 years, then annually x2 years until stable.

If stable, then duplex every 2 years

If progression, then every 6-12 months depending on scenario

After carotid stent:

For most patients:

Duplex within 3 months of the stent, then every 6 months x 2 years, then annually x2 years until stable.

If stable, then duplex every 2 years

If progression, then every 6-12 months depending on scenario

For patients with diabetes, aggressive in-stent restenosis (type IV – diffuse proliferative), prior treatment for in-stent restenosis, prior cervical radiation, or heavy calcification:

Duplex within 3 months of stent, then duplex every 6 months until stable clinical pattern is established and then annually thereafter.

Aortic aneurysm:

Screening:

One time ultrasound screening in men or woman ages 65-75 with a history of tobacco use

One time screening in men or women ages 65-75 with a first degree relative with AAA.

Consideration can be given to screening a patient >75 if in good health

Surveillance:

If aortic diameter >2.5 but <3cm: rescreen in 10 years (if appropriate based on age and health)

If aortic diameter 3-3.9cm: imaging every 3 years

If aortic diameter is 4.0-4.9cm: imaging every 12 months

If aortic diameter 5.0-5.4cm: imaging every 6 months, please consider Vascular surgery referral at this size if patient is a good surgical candidate

If aortic diameter 5.5cm and above, please consider consider Vascular surgery referral at this size if patient is a good surgical candidate

Post-EVAR:

Baseline imaging in the first month after EVAR with CTA AND duplex – if no endoleak or sac enlargement, then another CTA AND duplex at 12 months (non-contrast CT if contraindication to contrast).

After first year, if stable without leak, annual follow-up with CTA OR duplex (preferably duplex)

If type II endoleak seen within first month after EVAR, then they need a CTA AND duplex at 6 months

If type II endoleak after 6 months is associated with a shrinking/stable sac size, then duplexes every 6 months x 2 years and annually thereafter

Type I and III leaks receive additional contrast imaging and repair

Total aortic imaging with non-contrast CT scan every 5 years

Post-open repair

Total aortic imaging with non-contrast CT scan every 5 years

TEVAR:

Thoracic aortic aneurysm:

CTA at 1 month and 12 months after surgery and then annually

If abnormality at 1 month, then imaging at 6 months

Thoracic Dissection:

CTA at 1 month, 6 months, and 12 months, then annually if stable

Blunt Aortic Injury:

CTA at 1 month and 12 months, then annually if stable

If abnormality at 1 month, then imaging at 6 months

Open thoracic aneurysm repair:

CT imaging with or without contrast every 5 years

Peripheral Arterial Disease:

Screening:

Signs or symptoms of the disease (claudication or critical limb ischemia)

As a screening measure in patients with risk factors for medical management, risk stratification, and preventative care

NB: if patient has non-healing ulcer or gangrene, please schedule ABI urgently

NB: vascular claudication (leg pain with walking) presents stereotypically. If you have questions about whether a patient's symptoms may be vascular, please contact the vascular surgeons.

Surveillance after bypass:

Aortibifemoral bypass:

Clinical examination and ABI with or without addition of duplex in early post-op period, then at 6 months and 12 months. Continue exam and ABI with or without duplex annually unless new symptoms.

Iliofemoral bypass:

Clinical examination and ABI with or without addition of duplex in early post-op period, then at 6 months and 12 months. Continue exam and ABI with or without duplex annually unless new symptoms.

Femoral-femoral bypass:

Clinical examination and ABI with or without addition of duplex in early post-op period, then at 6 months and 12 months. Continue exam and ABI with or without duplex annually unless new symptoms.

Axillobifemoral bypass:

Clinical examination and ABI with or without addition of duplex in early post-op period, then at 6 months and 12 months. Continue exam and ABI with or without duplex annually unless new symptoms.

Infrainguinal bypass with PTFE:

Clinical examination and ABI with or without addition of duplex in early post-op period, then at 6 months and 12 months. Continue exam and ABI with or without duplex annually unless new symptoms.

Infrainguinal bypass with vein:

Clinical examination with ABI AND duplex ultrasound in the early post-operative period, then at 3 months, 6 months, and 12 months. Follow-up at least annually.

More frequent surveillance after one year if uncorrected abnormalities exist.

More frequent imaging also indicated if alternative vein conduits (other than great saphenous vein) are used.

Surveillance after angioplasty or stent:

Aortoiliac segment:

Clinical examination, ABI, and DUS within first month. Clinical examination and ABI with or without DUS at 6 months and 12 months, and then annually as long as there are no new signs or symptoms.

Femoropopliteal segment:

Clinical examination, ABI, and DUS within first month.

Continued surveillance at 3 months and then every 6 months if:

A stent was placed

Patients with critical limb ischemia because of an increased risk of recurrent critical limb ischemia should the intervention fail

Tibial segment:

Clinical examination, ABI, and DUS within the first month.

Consider continued surveillance at 3 and 6 months

Repeat DUS if deteriorating clinical vascular examination, return of rest pain, non-healing wounds, or new tissue loss

Mesenteric disease:

Screening:

Only if symptomatic

Surveillance after angioplasty, stent, or bypass:

Clinical follow-up and baseline DUS at 1 month after procedure, 6 months, 12 months, and annually thereafter

If symptoms recur, then contrast imaging

For celiac axis, PSV >370 cm/sec or substantial increase from post-treatment baseline PSV

For SMA, PSV >420 cm/sec or substantial increase from post-treatment baseline PSV

For IMA, substantial increase from post-treatment baseline PSV

Renal artery stenosis:

Screening:

Only if symptomatic (specifically, intervention is currently only recommended if the uncontrolled hypertension continues despite multiple medications and results in end-organ damage)

Surveillance after renal artery angioplasty, stent, endarterectomy, bypass:

Clinical follow-up and duplex within 1 month of the procedure, 6 months, 12 months, and annually thereafter

Contrast imaging indicated if: kidney length decreases by >1 cm, PSV 280 cm/s and above OR a significant increase from post-treatment baseline PSV, or renal-aortic ratio 4.5 or above

Provider decision support 7/18/2023

Dr Lundgen

