

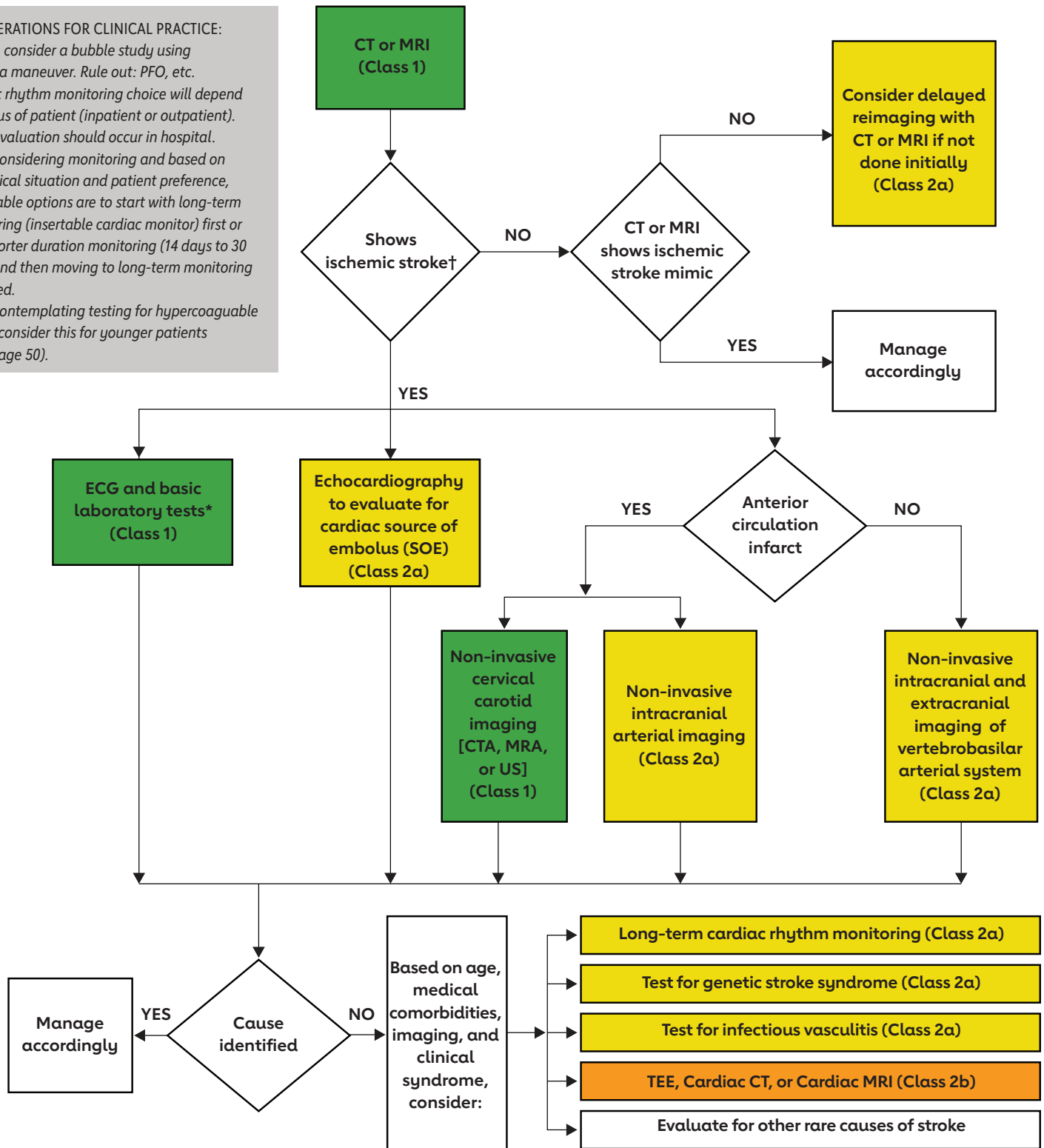


QUICK SHEET: IDENTIFYING A POTENTIAL CAUSE OR PREVIOUSLY UNKNOWN RISK FACTORS FOR CRYPTOGENIC STROKE

Algorithm for Evaluating Patients with Ischemic Stroke for Purposes of Optimizing Prevention of Recurrent Stroke

CONSIDERATIONS FOR CLINICAL PRACTICE:

- For TTE, consider a bubble study using Valsalva maneuver. Rule out: PFO, etc.
- Cardiac rhythm monitoring choice will depend on status of patient (inpatient or outpatient). Initial evaluation should occur in hospital.
- When considering monitoring and based on the clinical situation and patient preference, reasonable options are to start with long-term monitoring (insertable cardiac monitor) first or with shorter duration monitoring (14 days to 30 days) and then moving to long-term monitoring if needed.
- When contemplating testing for hypercoagulable states, consider this for younger patients (under age 50).



Abbreviations: CT, computed tomography; CTA, computed tomography angiogram; ECG, electrocardiogram; MRA, magnetic resonance angiography; MRI, magnetic resonance imaging; SOE, source of embolism; TEE, transesophageal echo; TIA; transient ischemic attack; and US, ultrasound

Kleindorfer DO, et al. 2021 Guideline for the Prevention of Stroke in Patients with Stroke and Transient Ischemic Attack: A Guideline from the American Heart Association/American Stroke Association. *Stroke*. 2021;52:e364-e467.

DIAGNOSTIC TEST

THERAPEUTIC IMPLICATIONS

CARDIAC CAUSES

| | | |
|----------------------|--|--|
| PAROXYSMAL OCCULT AF | <i>Noninvasive cardiac monitoring, and if no AF or flutter detected, then implantable cardiac monitoring</i> | <i>Anticoagulation therapy</i> |
| ATRIAL CARDIOPATHY | <i>Serum NT-proBNP, echocardiography, ECG</i> | <i>Treatment with antiplatelet vs anticoagulation is unknown. Ongoing clinical trials are testing the role of anticoagulation.</i> |
| ATRIAL SEPTAL DEFECT | <i>Echocardiography (TEE superior to TTE)</i> | <i>Venous imaging if atrial septal defect detected</i> |

ATHEROSCLEROTIC CAUSES

| | | |
|-----------------------------|---|--|
| AORTIC ARCH DISEASE | <i>Echocardiography (TEE superior to TTE)</i> | <i>Antiplatelet and intensive lipid management</i> |
| SUBSTENOTIC ATHEROSCLEROSIS | <i>Vessel wall imaging, plague MRI</i> | <i>Antiplatelet and statin therapy</i> |

OTHER CAUSES

| | | |
|-----------------------|---|--|
| CANCER | <i>CT chest, abdomen, and pelvis</i> | <i>Depends on stroke mechanism. Antiplatelet or direct-acting anticoagulation in setting of AF and cancer.</i> |
| HYPERCOAGULABLE STATE | <i>Hypercoagulable work-up, including antiphospholipid antibodies</i> | <i>Antiplatelet or anticoagulation therapy, based on findings</i> |
| ARTERIAL DISSECTION | <i>MRA with fat-suppressed images</i> | <i>Antithrombotic therapy (aspirin or warfarin)</i> |

*AF indicates atrial fibrillation; CT, computed tomography; MRA, magnetic resonance angiography; MRI, magnetic resonance imaging; NT-proBNP, N-terminal pro-B-type natriuretic peptide; TEE, transesophageal echocardiography; and TTE, transthoracic echocardiography.
Yaghi, S., Bernstein, R.A., Passman, R., Okin, P.M., Furie, K.L. (2017) Cryptogenic Stroke Research and Practice. *Circulation Research*(120),532.
Kleindorfer DO, et al. 2021 Guideline for the Prevention of Stroke in Patients with Stroke and Transient Ischemic Attack: A Guideline from the American Heart Association/ American Stroke Association. *Stroke*. 2021;52:e364-e467.

CLINICAL PROFESSIONALS INVOLVED IN DIAGNOSTIC EVALUATION:

□ Neurologist

Lead physician throughout patient's hospitalization, coordinate all services, initiate diagnostic tests and personnel involved with patient care. Whenever possible, a vascular neurologist should direct the evaluation.

Advanced practice provider

Can help to manage post-stroke follow up care, particularly related to secondary prevention.

Cardiologist

Necessary specialist to initiate diagnostic studies when cardiac testing is needed.

Electrophysiologist

Possible consultant to cardiologist if arrhythmia, specifically atrial fibrillation, is suspected cause of the event.

Hematologist

Consultation if hypercoagulability is suspected.

Oncologist

Consultation if hypercoagulability is suspected due to occult (or known) malignancy.

Radiologist

Accurate, timely imaging results coordination with neurologist, cardiologist and interventional radiologist.

□ Sleep specialist

Recommended consultation since sleep apnea significantly elevates risk of subsequent problems.

□ Stroke coordinator

Follow patient from first contact to optimize timing, maintain records, evaluate process and coordinate discharge.

□ Nurses

Continuous, direct, personal patient contact: accurate implementing of orders and recording of patient progress.

□ Hospital social worker/case manager

Connect patients to needed services, help patients and families navigate the medical system, and communicate patient needs and concerns to larger medical team.

□ Primary care professional

A health care practitioner who will follow the patient after the cryptogenic stroke is diagnosed. Primary care clinicians provide most of the care following a stroke patient's discharge from the hospital or inpatient rehabilitation. Primary care clinicians should receive a hospital discharge summary and examine whether any part of the evaluation of cause was deferred to the outpatient setting. Because there are important and complex decisions to make early after a stroke, this is when primary care physicians and neurologists may want to collaborate most closely.