

Emergency Department Clinical Guidelines
ED/CCT Acute Bradycardia Guidelines

Clinical Context and Purpose

The purpose of this guideline is to provide a clinical pathway for the emergency department management of patients presenting with acute bradydysrhythmias.

Background

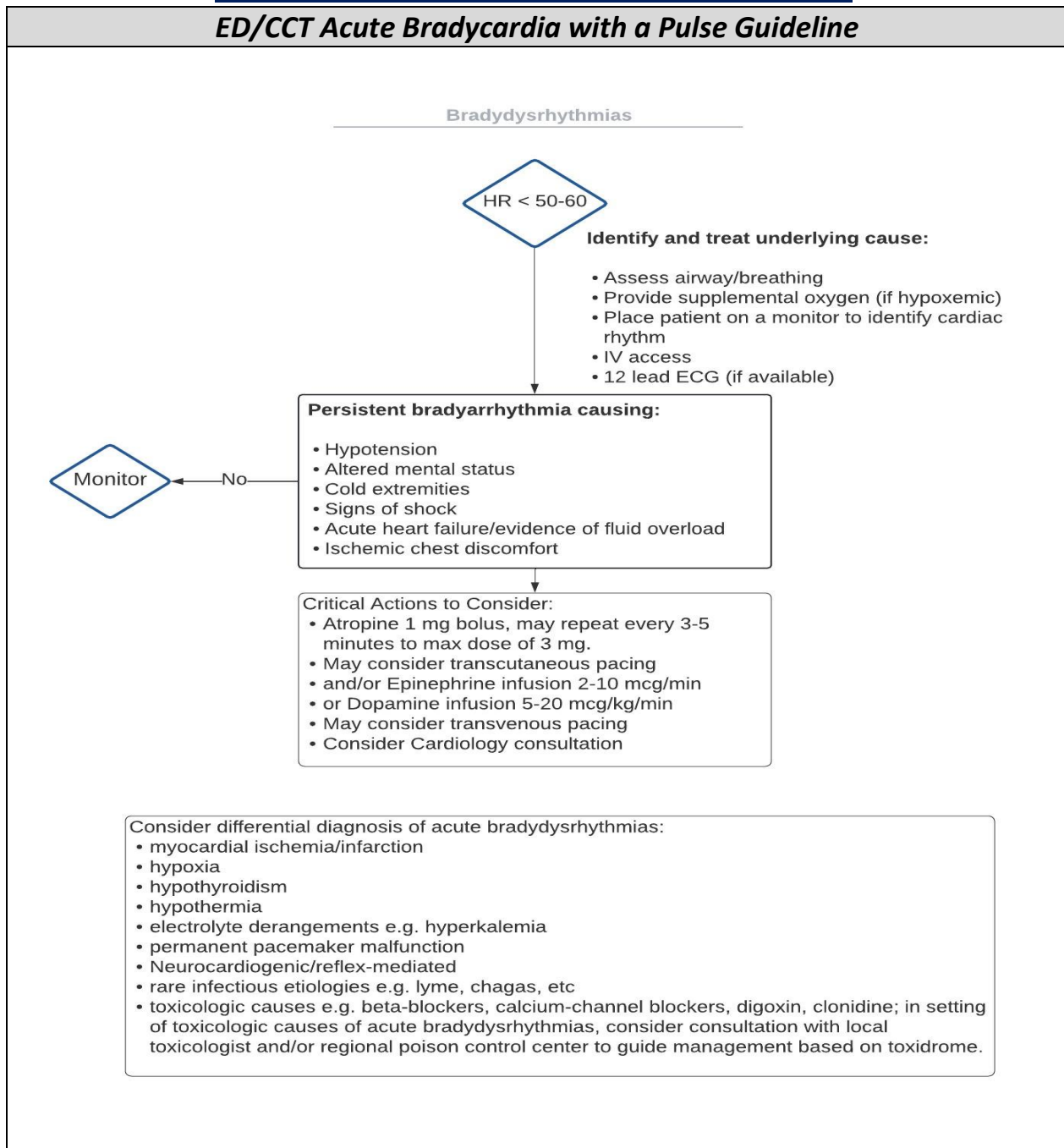
Acute bradydysrhythmias are a common clinical presentation in the emergency department. Two categories of cardiac causes of bradydysrhythmias include sinus node dysfunction (e.g. sinus bradycardia, sinus arrest, tachy-brady syndrome, and chronotropic incompetence) and atrioventricular blocks (e.g. first-degree AV block, type I second-degree AV block/Mobitz 1, type II second-degree AV block/Mobitz 2, and third-degree heart block). Importantly, the differential diagnosis for acute bradydysrhythmias may include but is not limited to: myocardial ischemia, raised intracranial pressure, neurocardiogenic/reflex-mediated, metabolic or endocrine causes such as hyperkalemia or hypothyroidism, environmental hypothermia, infectious causes, e.g. Lyme disease, and toxicologic causes e.g. AV-nodal blocker (beta-blocker, calcium-channel blocker, or digoxin) overdose.

Acute bradycardia may decrease cardiac output and decrease end-organ perfusion leading to altered mental status, syncope/near-syncope, ischemic chest pain, acute heart failure, and/or frank circulatory shock. In hemodynamically unstable patients, resuscitation and stabilization may need to proceed simultaneously with diagnosis. Hemodynamic stabilization may require using fluids while assessing fluid tolerance, utilizing vasoactive medications titrated to patient response, transcutaneous or transvenous pacing, treatment of hyperkalemia, as well as consultation with a toxicologist for guidance on antidotal therapy. Importantly, emergent transcutaneous pacing is a potentially painful procedure and analgesia and/or sedation may be required.

In the setting of acute bradydysrhythmias due to primary cardiac causes, consultation with cardiology should be considered to coordinate appropriate disposition planning and/or arrange for definitive care; this may occasionally require transfer to another facility. In patients with acute bradydysrhythmias due to drug toxicity/overdose, in addition to discussion with medical toxicology/poison control, appropriate consultation may include medical critical care. Therapies for bradycardia due to drug toxicity may include but are not limited to use of intravenous (IV) calcium, IV glucagon, high-dose euglycemic insulin therapy with dextrose, vasoactive infusions titrated to patient response, lipid emulsion therapy, and in rare refractory cases, mechanical circulatory support.

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ED/CCT Acute Bradycardia with a Pulse Guideline



Resources/References

Panchal, AR, et al. Part 3: Adult Basic and Advanced Life Support: 2020 American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care. *Circulation*. 2020. 142: S366.