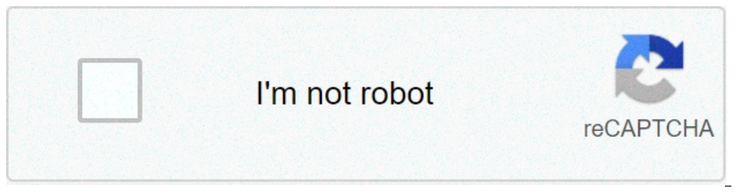

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Aha guidelines sinus bradycardia

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We need to be experts in managing this.Here's what you need to knowSinus node dysfunction (formerly called sick sinus syndrome) is a broad term that encompasses a variety of conditions:Sinus bradycardia with HR < 50 bpmEctopic atrial bradycardia with HR < 50 bpmSinus pause > 3 secondsSinus arrestChronotropic incompetence: HR does not increase appropriately during physical exertion.Tachy/brady syndrome: Atrial tachycardia (usually A fib) is most commonly followed by sinus pauses at the termination of the tachycardia. This transition often leads to syncope or near syncope.Isorhythmic dissociationSinus node dysfunction must occur in the presence of symptoms. In other words, Lance Armstrong's resting heart rate of 32 bpm is not sinus node dysfunction.Workup and managementIn all situations, first consider reversible causes of SND or blocks, especially hyperkalemia or hypokalemia. Those with reversible causes generally don't need a permanent pacemaker. See Table 7 from the guideline.Then consider atropine with a few words of caution:Paradoxical bradycardia: You must give at least 0.5mg of atropine. Giving less may cause bradycardia.Avoid in heart transplant patients: Atropine causes heart block or sinus arrest in up to 20% of patients. Bradycardia in heart transplant patients is often defined as < 70-80 bpm.Is the QRS narrow or wide? AV block with a narrow QRS generally indicates the block is at the AV node and conducting through the His-Purkinje system normally. Therefore, atropine will help. If the AV block is infra-nodal, atropine does not help and has even been reported to worsen conduction delays. Try a catecholamine instead (or just pace them) unless there is concern for possible cardiac ischemia as a cause of the bradycardia.If hemodynamically unstable or with severe symptoms, pace the patient either transcutaneously or transvenously.Consider aminophylline, which inhibits the suppressive effects of adenosine on the SA node, in 3 situations:Acute inferior MI with 2nd or 3rd degree AV block: 250mg IV bolusHeart transplant: 6mg/kg in 100-200 mL of IV fluid over 20-30 minutesSpinal cord injury: Often refractory to atropine and catecholamines due to de-innervation. Use the same dose as for heart transplant. Who gets a permanent pacemaker?Patients with irreversible, symptomatic sinus node dysfunctionPatients with complete heart block or at risk for developing CHB (i.e. infra-nodal block):Mobitz I (if infra-nodal)Mobitz II2:1 AV block (if infra-nodal)High grade AV blockECG with alternating LBBB and RBBBSyncope + BBB + HV interval > 70ms (HV interval is a measurement of His-Purkinje system to evaluate for conduction disease) From cited article. SND = sinus node dysfunction By Joshua D. Moss, MDAssociate Professor of Clinical Medicine, Cardiac Electrophysiology, Division of Cardiology, University of California, San FranciscoDr. Moss reports he is a consultant for Biosense Webster and Abbott.SYNOPSIS: The American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines and the Heart Rhythm Society have established updated guidelines on the evaluation and management of patients with bradycardia and conduction delays. Many key elements remain largely unchanged from prior guideline recommendations on pacemakers published in 2008 and 2012, but there are important new definitions, recommendations, and areas of emphasis.SOURCES: Kusumoto FM, Schoenfeld MH, Barrett C, et al. 2018 ACC/AHA/HRS guideline on the evaluation and management of patients with bradycardia and cardiac conduction delay. Circulation 2018. Available at: . Accessed Nov. 9, 2018.Slotwiner DJ, Raitt MH, Del-Carpio Munoz F, et al. Impact of physiologic pacing versus right ventricular pacing among patients with left ventricular ejection fraction greater than 35%: A systematic review for the 2018 ACC/AHA/HRS guideline on the evaluation and management of patients with bradycardia and cardiac conduction delay. Circulation 2018. Available at: . Accessed Nov. 9, 2018.For patients with sinus node dysfunction (including sinus bradycardia, sinus pauses, and chronotropic incompetence), particularly with nocturnal bradycardia, evaluation should include consideration of screening for sleep apnea. Treatment of sleep apnea can offer cardiovascular benefits beyond reduction in nocturnal bradycardia events. Permanent pacing is not required if nocturnal bradycardia is the only manifestation of sinus node dysfunction. Importantly (and consistent with prior guideline recommendations), observation alone is appropriate in the setting of sinus node dysfunction without any associated symptoms.The newly emphasized corollary is the absence of any defined minimum heart rate or pause duration that should prompt pacemaker implant (even in the absence of symptoms). A pacemaker for minimally symptomatic patients with chronic heart rates < 40 bpm while awake is no longer a Class IIb recommendation.Appropriate monitoring to establish correlation between bradycardia and symptoms is critical, including via implantable cardiac monitors if symptoms are infrequent (> 30 days between symptoms).ATRIOVENTRICULAR BLOCKAs in the past, permanent pacemakers are not recommended for patients with atrioventricular (AV) block due to a reversible and nonrecurrent cause (such as Lyme carditis). Permanent pacemakers also may result in harm to asymptomatic patients with first-degree AV block, second-degree Mobitz type I (Wenckebach) AV block, or 2:1 AV block believed to be at the level of the AV node. However, a permanent pacemaker is recommended now, regardless of symptoms for patients with acquired second-degree Mobitz type II AV block, complete (third-degree) AV block, and high-grade AV block (defined as ≥ 2 consecutive P waves at a constant physiologic rate that do not conduct to the ventricles).Previously, for asymptomatic patients with these more dangerous types of AV block, a permanent pacemaker was considered a Class IIa recommendation rather than this new Class I recommendation.CONDUCTION DISORDERS WITH 1:1 AV CONDUCTIONMore emphasis is placed on evaluating patients with intact AV nodal conduction but evidence of infranodal conduction disease, particularly left bundle branch block (LBBB). Newly diagnosed LBBB should prompt evaluation for structural heart disease, starting with an echocardiogram, given the strong association between LBBB and left ventricular systolic dysfunction. Ambulatory monitoring for AV block also is recommended for symptomatic patients with LBBB. An electrophysiology study is reasonable if there are intermittent symptoms suggestive of bradycardia, such as lightheadedness or syncope, that cannot be captured on monitoring.PHYSIOLOGIC PACINGThe new guidelines speak more to the increasingly appreciated risks of heart failure and atrial fibrillation associated with chronic right ventricular (RV) pacing. This applies particularly to those patients who do not already suffer from impaired left ventricular function (ejection fraction, ≤ 35%) and would already qualify for cardiac resynchronization therapy (CRT) via biventricular pacing.For patients expected to require ventricular pacing > 40% of the time because of AV block and who have a left ventricular ejection fraction between 36% and 50%, pacing methods that maintain more physiologic ventricular activation are now a Class IIa recommendation based on recent randomized studies.Such pacing methods include CRT and His bundle pacing (included for the first time in published guidelines). That technique, described for temporary pacing as far back as the 1960s and with permanent pacemaker leads almost 20 years ago, has grown in popularity and garnered research interest in the electrophysiology community recently. A pacing lead is implanted directly into or near the bundle of His using specialized lead delivery tools, depolarizing the ventricles via the His-Purkinje system.The resultant paced QRS complex is narrow and sometimes indistinguishable from the native conducted QRS complex, with an isoelectric segment between the pacing artifact and QRS complex that can be mistaken for lack of pacemaker capture. More research is required before the technique is adopted for more indications, but studies thus far suggest a lower likelihood of deleterious effects compared with traditional RV pacing.