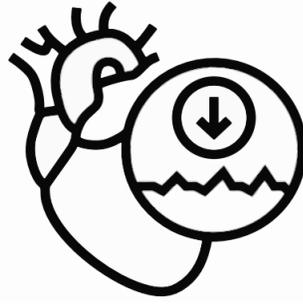




Standard Treatment Workflow (STW)

BRADYARRHYMIAS IN SYMPTOMATIC PATIENTS

ICD-11-MC81.1



WHEN TO SUSPECT

Patient with any of the following symptoms, AND a pulse rate < 50bpm: (persistent)

Syncope/ presyncope/ dizziness

Lethargy/ fatigue

Breathlessness/ chest pain on exertion

BASIC EVALUATION

HISTORY

- Syncope/presyncope: frequency, associated fall/ injury/incontinence
- Exertional angina or known coronary artery diseases
- Look for reversible cause like drugs (Beta-blockers, Calcium Channel Blockers or digoxin)
- Known hypothyroidism or kidney disease
- Sleep apnea
- Patient with an implanted pacemaker or other device

EXAMINATION

- Drowsiness/ impaired consciousness
- Pulse, BP

TESTS TO BE DONE

Patient presenting to PHC/CHC:

- 12-lead ECG
- Blood urea, serum creatinine
- Electrolytes
- Blood sugar
- TSH

EVALUATION AND TREATMENT OF UNSTABLE PATIENTS

1. TREATMENT OF ASSOCIATED CONDITIONS

- Suspected drug (BB or CCB) overdose:

- Withhold the drug

- Hyperkalemia (serum K⁺ > 6 meq/l or with ECG changes of hyperkalemia)

1. Stop exogenous potassium, K sparing diuretics, NSAID, RAAS inhibitors
2. 10 ml of 10% calcium gluconate over 10 mins
3. IV insulin with glucose
4. IV sodabcarb
5. Salbutamol inhalation/ loop diuretics/ potassium binders

2. TEMPORARY PACEMAKER INSERTION

(iv dopamine or isoprenaline may be given till the time TPI can be placed)

EVALUATION AND MANAGEMENT OF STABLE PATIENTS

Findings on 12-lead ECG

- Atrioventricular block
- Sinus node dysfunction
- Bundle branch blocks, tri-fascicular blocks
- AF with CHB

INDICATIONS FOR URGENT TREATMENT/REFERRAL

- Hypotension (SBP < 90 mmHg), impaired consciousness or ongoing chest pain
- Recurrent or ongoing syncope/presyncope
- Associated headache with or without neurologic deficit (suspect intracranial event)
- Patient with a pre-existing device
- If ECG available, evidence of any of the following
 - Complete heart block
 - Sinus node disease with pauses > 3 s long
 - Bradycardia (HR < 50 bpm)

GENERAL APPROACH TO PATIENTS WITH SYMPTOMATIC BRADYCARDIA

1. Rule out associated conditions

Drug toxicity (BB, CCB, clonidine, Lithium)
Renal dysfunction, hyperkalemia
Sleep apnea

2. Transthoracic echocardiography

INDICATIONS FOR PERMANENT PACING

AV CONDUCTION DISEASE

- Complete heart block, advanced AV block, or Mobitz Type II block
- Associated neuromuscular disease

SINUS NODE DYSFUNCTION

- Symptomatic patients with sinus pauses > 3s long with symptom correlation or heart rate < 40/min during awake hours

OTHER CONDUCTION DISORDERS WITH 1:1 AV CONDUCTION

- Unexplained syncope in a patient with BBB or documented transient high grade AV block with no reversible cause identified
- Others (alternating BBB, infiltrative/ neuromuscular disease)

RECOMMENDED PACING MODES

1. SND with intact AV conduction

- Atrial-based single or dual chamber pacing
- VVI pacing is reasonable if symptoms are infrequent

2. AV Conduction disease

- VVI/Dual chamber pacing in patients with LVEF > 50%
- CRT/LBBA pacing system pacing in patients with LVEF < 40%

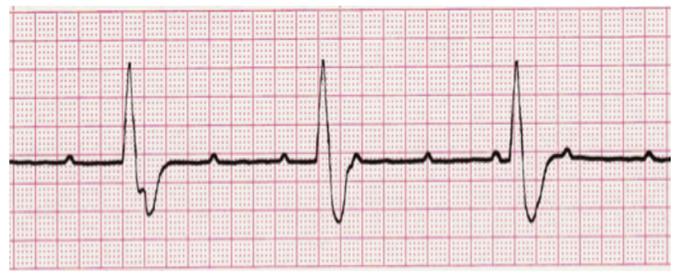
ADDITIONAL TESTING

1. **Advanced imaging** (cMRI) may be needed if infiltrative disease is suspected
2. **Ambulatory ECG** may be needed
 - In patients with first or second degree AV block for symptom correlation
 - In patients with suspected sinus node disease for detection of pauses and symptom correlation
 - In symptomatic patients with LBBB or bifascicular block
3. **Implantable Loop Recorder and EPS** (consult published society guidelines)

ECG: SINUS BRADYCARDIA



ECG: THIRD DEGREE HEART BLOCK



ABBREVIATIONS

BB: Beta Blocker

CCB: Calcium Channel Blockers

CMRI: Cardiac Magnetic Resonance Imaging

CRT: Cardiac Resynchronization Therapy

ECG: Electrocardiogram

LVEF: Left Ventricular Ejection Fraction

VVI: Velocity Vector Imaging

LBBA: Left Bundle Branch Area

REFERENCES

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2. Glikson M et al. 2021 ESC guidelines on cardiac pacing and cardiac resynchronization therapy. European Heart J (2021) 00, 1-94

BRADYARRHYTHMIA MANAGEMENT: RESTORING LIFE'S NATURAL RHYTHM

This STW has been prepared by national experts of India with feasibility considerations for various levels of healthcare system in the country. These broad guidelines are advisory, and are based on expert opinions and available scientific evidence. There may be variations in the management of an individual patient based on his/her specific condition, as decided by the treating physician. There will be no indemnity for direct or indirect consequences. Kindly visit our web portal (stw.icmr.org.in) for more information.

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