

Bradycardia Algorithm

A plain-English guide for you and your family

WHAT IS HAPPENING

Your heart has a natural pacemaker called the SA node (sinoatrial node, the electrical starter sitting in the upper right chamber) that normally fires 60 to 100 times every minute. That electrical spark travels through a relay station called the AV node (atrioventricular node, which sits between the top and bottom chambers) and then down wires to make the bottom chambers squeeze and pump blood to your whole body. When something slows this system—a medication like a beta-blocker or calcium-channel blocker, a heart attack that cuts off blood to the electrical tissue, potassium levels that are too high or too low, strong signals from the vagus nerve (the nerve that acts like a brake pedal on your heart), or the node cells simply wearing out with age—your heart beats fewer than 60 times per minute. If it slows enough that your brain, kidneys, and muscles do not get enough oxygen-rich blood, you feel dizzy or confused, your blood pressure drops, you may feel chest pain, and your skin turns pale and sweaty. These alarm bells are not separate problems—they all trace back to one upstream electrical slow-down. Doctors fix the root cause (stop the drug, correct the potassium, open the blocked artery if there is one) and speed the heart temporarily with atropine (a drug that blocks the vagus brake), external pacing (small electrical pulses delivered through patches on your chest to keep the heart beating), or medications that rev the heart rate until the root problem is repaired or a permanent pacemaker is placed.

What you might feel

- Dizziness or lightheadedness
- Fainting (Syncope) (fainting or passing out)
- Confusion or feeling very drowsy
- Chest pain or pressure
- Shortness of breath
- Low blood pressure (systolic less than 90)
- Sweating and pale, cool skin
- Fatigue or weakness

Call the doctor right away if...

- Fainting or near-fainting (sign the heart is not pumping enough blood; risk of sudden cardiac arrest)
- Chest pain or changes on the ECG suggesting the heart muscle is starving for oxygen
- Confusion or drowsiness (brain is not getting enough blood; collapse may be coming)
- Systolic blood pressure below 90 with signs of shock (pale, cool, sweaty skin; weak pulses)
- Second-degree AV block type II or third-degree (complete) heart block on ECG (high risk the heart will stop; needs pacing right away)

What the care team will do

- Place patient on continuous cardiac monitor and pulse oximetry; obtain 12-lead ECG within 5 minutes and assess for heart block or ST-segment changes.
- Assess and document blood pressure, level of consciousness using AVPU or Glasgow Coma Scale, skin color and temperature, capillary refill, and presence of pulses every 1 to 2 minutes until stable.
- Establish large-bore IV access (18-gauge or larger) in at least one site and prepare for rapid administration of atropine, dopamine, or epinephrine infusions.
- If atropine is ineffective or the patient shows signs of shock or high-grade block, immediately apply transcutaneous pacing pads to the chest in anterior-posterior or anterior-lateral position and prepare TCP equipment.
- Administer atropine 1 mg IV push rapidly; if no response, repeat every 3 to 5 minutes up to maximum total dose of 3 mg while monitoring heart rate and rhythm on the monitor.
- Prepare dopamine infusion starting at 5 mcg/kg/min or epinephrine infusion starting at 2 mcg/min if atropine fails or while awaiting pacing; titrate upward to achieve systolic blood pressure above 90 and heart rate above 60.
- If transcutaneous pacing is initiated, sedate the patient with small doses of a short-acting benzodiazepine like midazolam or an opioid like fentanyl as ordered, because TCP causes painful muscle contractions.
- Notify the physician or rapid-response team immediately and prepare for possible transvenous pacing or transfer to a higher level of care if the patient has second-degree AV block type II, third-degree heart block, or does not respond to atropine and TCP.

Medicines you may be given — and why

Atropine

Atropine blocks the vagus nerve's brake pedal on the heart. The vagus nerve normally slows your heart down; atropine stops that signal so your heart can speed up naturally.

Dopamine infusion

Dopamine acts like a gas pedal for the heart. It locks onto special docking spots (beta-1 receptors) on heart cells and tells them to beat faster and squeeze harder.

Epinephrine infusion

Epinephrine (adrenaline) is the body's emergency turbo-charge signal. It tells the heart to beat faster and harder by activating the same fight-or-flight receptors your body uses in danger.

Transcutaneous pacing (TCP)

Transcutaneous pacing uses sticky electrode pads on the chest and back to send electrical shocks through the skin and force the heart to beat. It acts as a temporary external pacemaker when the heart's own rhythm is too slow or stops.

Transvenous pacing (TVP)

Transvenous pacing threads a thin wire through a vein into the right side of the heart and delivers timed electrical pulses directly to the heart muscle. It is more reliable and comfortable than pacing through the skin because the wire sits right where it is needed.

Where this information comes from

- AHA/ACC 2018 Guideline on the Evaluation and Management of Patients With Bradycardia and Cardiac Conduction Delay
- AHA ACLS Provider Manual 2020 (updated 2023)
- European Society of Cardiology 2021 Guidelines on Cardiac Pacing and Cardiac Resynchronization Therapy
- UpToDate: Sinus Bradycardia (Mangrum & DiMarco, current through 2024)

Last reviewed: 2026-07-07