



POTS

Postural Orthostatic Tachycardia Syndrome

A practical guide to recognition, evaluation, and management

Core idea: POTS is a chronic pattern of excessive sinus heart-rate rise and symptoms when upright. The symptoms often improve after lying down.

What happens when someone stands?

Gravity shifts blood into the legs and abdomen. Normally, blood vessels constrict and heart rate rises modestly to maintain blood flow to the brain. In POTS, this compensation is less effective. Different patients may have low circulating volume, excess pooling, altered autonomic signaling, or deconditioning; no one mechanism explains every case.

Typical symptoms

Lightheadedness, palpitations, tremulousness, weakness, blurred vision, fatigue, exercise intolerance, and cognitive “brain fog” while upright. Headache, nausea, bloating, heat intolerance, and sleep disturbance may coexist. Fainting can occur but is not required. The positional pattern matters: symptoms worsen upright and often improve supine.

Diagnostic criteria: all must be present

Element	What to look for
Heart rate	Sustained increase ≥ 30 beats/min in adults within 10 minutes of standing; ≥ 40 beats/min at ages 12–19. Confirm on at least two upright readings ≥ 1 minute apart.
Blood pressure	No sustained orthostatic hypotension (drop ≥ 20 mm Hg systolic or ≥ 10 mm Hg diastolic).
Symptoms and duration	Frequent orthostatic symptoms that improve on lying down, present for at least 3 months.
Exclusions	No other condition adequately explaining sinus tachycardia.

Example: HR 72 supine and 108 while standing, sustained with upright symptoms and without a significant BP drop, meets the adult heart-rate criterion. The reading alone does not establish POTS.



Evaluation at the bedside

A structured 10-minute standing assessment

- Have the patient lie supine for 5–10 minutes. Record heart rate, blood pressure, and symptoms.
- Have the patient stand safely, with support available. Record heart rate and blood pressure at 1, 3, 5, 8, and 10 minutes; document symptoms.
- Look for a sustained heart-rate rise and check whether blood pressure falls. A transient rise immediately on standing is insufficient.
- If suspicion remains high despite a negative test, reassessment (often in the morning) or tilt-table testing may help.

What can look like POTS?

Finding	Alternative to consider
New onset after illness or surgery	Dehydration, blood loss, anemia, infection, fever, pain, pulmonary embolism, medication effect, or prolonged bed rest.
Blood pressure drops substantially	Orthostatic hypotension, possibly with compensatory tachycardia.
Heart rate high even while supine	Inappropriate sinus tachycardia or another cause of persistent tachycardia.
Sudden start and stop of rapid rate	SVT or another tachyarrhythmia; obtain rhythm documentation.
Relevant medical or drug history	Hyperthyroidism, adrenal disease, stimulants, diuretics, or other medications that raise heart rate.

Initial workup

A focused history, medication review, physical examination, orthostatic vital signs, and ECG are central. Blood tests may include hemoglobin, electrolytes, renal function, ferritin, TSH, and morning cortisol as indicated. Additional testing follows findings rather than a universal panel.

Postoperative pearl: New tachycardia or lightheadedness after surgery requires evaluation for acute causes. A chronic POTS label should not be used to explain an unstable postoperative patient.



Management and follow-up

Start with the physiology and patient context

- Fluid and sodium: Adequate hydration and an individualized increase in salt may help expand circulating volume. Typical published targets are not appropriate for every patient, particularly with heart failure, renal disease, hypertension, or fluid restriction.
- Compression: Waist-high garments that include abdominal compression can reduce venous pooling.
- Graded conditioning: Begin with tolerable recumbent activity such as cycling or rowing, then progress slowly. Improvement may take weeks and early sessions can feel difficult.
- Review triggers: Heat, prolonged standing, inadequate intake, and medications that worsen tachycardia can intensify symptoms.

Medication options are individualized

Treatment target	Examples and considerations
High upright sinus rate	Low-dose propranolol may help, but can worsen hypotension or asthma. Ivabradine is another option when appropriate; monitor for bradycardia and visual effects.
Low vascular tone / low BP	Midodrine can improve vasoconstriction; avoid dosing near bedtime because of supine hypertension.
Low circulating volume	Fludrocortisone may be considered; monitor edema, BP, and potassium.
Selected symptom patterns	Pyridostigmine or sympatholytic agents may be considered by a clinician familiar with autonomic disorders.

Treatment aims to improve function and quality of life. There is no single cure or universal drug regimen; medication evidence remains limited. Many people improve with a tailored combination of strategies, though symptoms can persist.

When to seek urgent evaluation

Chest pain, significant shortness of breath, persistent fainting, new neurologic symptoms, signs of bleeding, fever with illness, or a new sustained rapid/irregular rhythm require prompt assessment rather than attribution to POTS.

Selected references

1. Raj SR, et al. Diagnosis and management of postural orthostatic tachycardia syndrome. CMAJ. 2022;194:E378-E385. doi:10.1503/cmaj.211373. <https://pmc.ncbi.nlm.nih.gov/articles/PMC8920526/>
2. Sheldon RS, et al. 2015 Heart Rhythm Society expert consensus statement on diagnosis and treatment of POTS, inappropriate sinus tachycardia, and vasovagal syncope. Heart Rhythm. 2015;12:e41-e63. <https://pmc.ncbi.nlm.nih.gov/articles/PMC5267948/>
Clinical education only. Apply patient-specific assessment and local protocols.