

# Postural Orthostatic Tachycardia Syndrome

## Background

Postural orthostatic tachycardia syndrome (POTS) is a disorder of the autonomic nervous system characterized by chronic orthostatic intolerance (OI) and increased heart rate upon standing. POTS is increasingly recognized in children and adolescents with symptoms affecting their cardiovascular, neurological, and gastrointestinal health.

The pathophysiology of POTS remains relatively unknown, but some theories are linked to hypovolemia and autonomic dysfunction. The most common causes of POTS include bacterial or viral infections, Ehlers-Danlos syndrome, diabetes, and autoimmune disorders. There are several clinical forms of POTS including hypovolemic POTS, neuropathic POTS, and hyperadrenergic POTS. These subtypes are each distinguished by their major mechanisms and characteristics but are not exclusive.

Symptoms may vary and even overlap based on type and the individual's growth and development. Symptoms can range from mild to severely debilitating, including:

- Lightheadedness
- Dizziness
- Joint and muscle pain
- Fatigue
- Reduced mental and physical stamina
- General weakness
- Abdominal pain, nausea
- Headache
- Chest pain
- Difficulty thinking or concentrating
- Visual changes, blurred vision

Periods of acute exacerbations of POTS symptoms can be triggered by precipitating factors including prolonged periods of standing, exposure to heat, stress, and the start of the menstrual cycle. POTS symptoms may also worsen with a common cold or infection.

A management plan may include a combination of pharmacologic, nonpharmacologic, and lifestyle modalities. There are currently no FDA approved medications to treat POTS alone, but medications may be prescribed to support symptom management by increasing blood volume, retaining fluids, raising blood pressure, or slowing heart rate.



Lifestyle or behavioral modifications including consistent exercise conditioning, compression garments, trigger avoidance (e.g., extreme temperatures, stress) and diet have been recommended. Physical countermeasure maneuvers are simple movements that can be done while seated or standing to reduce symptoms. Squatting, leg crossing, muscle pumping, and muscle tensing like “heel pumps” can help increase orthostatic tolerance. Increasing both fluid and salt intake have been recommended to increase blood volume and prevent drops in blood pressure.

## Top Takeaways for School

Postural orthostatic tachycardia syndrome (POTS) is an autonomic disorder causing symptoms like lightheadedness, dizziness, fast heart rate and fatigue upon standing.

Individuals with POTS are encouraged to sit or lie down immediately if they feel faint, dizzy, or lightheaded. Symptoms of acute exacerbation are generally not considered a medical emergency.

Increasing both fluid and salt intake are recommended to reduce symptoms. Students with POTS should be permitted to carry a water bottle, have access to appropriate snacks (e.g., water, sports drinks, salty crackers), and carry a bathroom pass.

Students should avoid prolonged periods of standing. Consider times like lunch line, fire drills, bus line up, etc. Allow the student to sit down, recline, or elevate legs when possible or per symptoms.

Many students with POTS do not function well in the morning and scheduling flexibility or an adjusted school day may be beneficial.

## Considerations for the Individualized Healthcare Plan (IHP)

- Nursing diagnoses: Reduced cardiac output, risk for unstable blood pressure, fatigue, impaired thought process
- Nutrition interventions and equipment (consider fluid and salt intake recommendations, suggested snacks, salt supplements, etc.)
- Student-specific triggers, avoidance, or intervention strategies
- Use of specialized equipment, adaptive equipment and orthotics
- Activity, positioning, transferring (consider precautions and/or restrictions)
- Consider emergency action plans (EAPs) and emergency evacuation plans (EEPs) related to special health care needs, including staff education/training

## Discussion Starters for the Educational Team

1. Would the student benefit from evaluations or assessments in any of the following areas: physical therapy, occupational therapy, speech and language therapy, assistive technology, adapted physical education, functional behavior, psychology, hearing and vision?
2. Would the student benefit from additional academic support and/or modified education (e.g., copies of notes, extra time, reduced workload, simplified instructions, alternative formats for presentation of material, 504/IEP)?
3. Would schedule flexibility support the student?
4. Does the student require activity precautions to prevent injury?
5. Can rest breaks, safe spaces or reduced stimulation times be built into the student's schedule?
6. Will staff receive education/training to implement the student-specific emergency plan?

## Resources

Kennedy Krieger Institute: Pediatric Postural Orthostatic Tachycardia Syndrome Clinic  
[kennedykrieger.org/patient-care/centers-and-programs/pediatric-postural-orthostatic-tachycardia-syndrome](https://kennedykrieger.org/patient-care/centers-and-programs/pediatric-postural-orthostatic-tachycardia-syndrome)

Dysautonomia Support Network  
[dysautonomiasupport.org/](https://dysautonomiasupport.org/)

Standing Up to POTS  
[standinguptopots.org/](https://standinguptopots.org/)



For more information, please scan the QR code or visit: [KennedyKrieger.org/SHNIC](https://KennedyKrieger.org/SHNIC)

