

Diagnosing and Treating Postural Orthostatic Tachycardia Syndrome (POTS) in Long COVID patients

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Postural orthostatic tachycardia syndrome (POTS), a form of cardiac dysautonomia, has been [associated with long COVID](#). A [recent BMJ paper](#) (Feb. 2023) cites estimates that 25% of long COVID patients may have dysautonomia and 2-14% will develop POTS six to eight months after infection. Patients can find these symptoms debilitating, affecting function and mood, and limiting the ability to work and activities.

The OCFP has developed this summary for diagnosing and treating POTS based on information from the [Canadian Cardiovascular Society](#) and inspired by a presentation by Dr. Kieran Quinn in the [COVID-19 Community of Practice for Family Physicians, Feb. 24, 2023](#).

Diagnosis

A 10-minute passive standing test is used to diagnose POTS. To identify potential secondary causes, evaluation should also include a complete clinical history, physical examination (including orthostatic vital signs), a 12-lead ECG to assess potential underlying arrhythmias, and bloodwork for complete blood count, electrolytes (Na⁺, K⁺, and CL⁻), renal function (creatinine and urea), iron, TSH, and morning cortisol level.

As noted in this [CMAJ paper](#), orthostatic tachycardia may vary slightly from day to day and can be greater in the morning than later in the day: “If a clinician has a high suspicion of POTS, but a patient does not meet the criterion for orthostatic tachycardia at their initial evaluation, reassessment at a later date is prudent, preferably in the morning.”

Symptoms

POTS symptoms typically last more than three months and symptom clusters may vary from patient to patient. Common symptoms associated with a change in position (e.g., from lying down to standing up) are **lightheadedness, palpitations, tremulousness and atypical chest discomfort**.

Other symptoms not associated with changes in position include sleep disturbances, headaches, chronic fatigue, exercise intolerance, brain fog, peripheral acrocyanosis (POTS feet), frequent nausea, and/or mild diarrhea, constipation, bloating, and unspecified abdominal pain (IBS).

10-minute standing test for POTS

1. Ask patient to lie on examination table for at least 5 minutes.
2. While patient is lying down, measure and record heart rate and blood pressure once per minute for 3 minutes.
3. Ask patient to stand up and lean with their back against the wall with feet together, touching only shoulder blades to the wall.
4. While patient is standing, **measure and record heart rate and blood pressure once per minute for 10 minutes**, and record any spontaneously reported symptoms during the test, including other indications of orthostatic intolerance.

PATIENT IS POSITIVE FOR POTS if they have a sustained increase in heart rate of 30 bpm or greater (40 bpm or greater in children/adolescents) from lying down to standing, as measured within 10 minutes of standing, for at least two consecutive readings (separated by at least one minute), with no drop in blood pressure, i.e., absence of orthostatic hypotension.

Management/Treatment

Guidelines for management of POTS include non-pharmacological and pharmacological interventions. Complex patients, such as those who do not respond to initial therapies described below, may be referred to a POTS specialist for further investigation.

Non-drug treatments:

- If possible, withdraw any medication or substance that might exacerbate orthostatic tachycardia or orthostatic symptoms.
- 3 to 4 litres of fluids per day to increase blood volume.
- 10 grams of salt (table) to increase blood volume.
- Sleep in head-up tilt position (>10°) to promote volume expansion and reduce nocturnal diuresis.
- *If tolerated*, compression stockings of 30 to 40 mmHg, to reduce venous pooling. Check for severe arterial or venous insufficiency in lower extremities, using the [ankle-brachial index](#) to assess vascular function.
- If possible, aerobic exercise training with additional leg resistance training – has been shown to improve symptoms for POTS patients.

Pharmacological management:

This [BMJ paper](#) notes that, “Evidence from clinical trials is limited, therefore no licensed medications are available for orthostatic tachycardia in any country”, and lists several off-label medications in consensus guidelines and published literature for symptomatic relief. Similarly, the [Canadian Cardiovascular Society position paper](#) includes recommendations also aimed at relieving symptoms.

Sources

- Canadian Cardiovascular Society Position Statement on Postural Orthostatic Tachycardia Syndrome (POTS) and Related Disorders of Chronic Orthostatic Intolerance: [https://www.onlinecjc.ca/article/S0828-282X\(19\)31550-8/fulltext](https://www.onlinecjc.ca/article/S0828-282X(19)31550-8/fulltext)
- Orthostatic tachycardia after COVID-19 – *BMJ* 2023;380:e073488: <https://www.bmj.com/content/380/bmj-2022-073488>
- Assessing common and potentially modifiable symptoms of post-COVID-19 condition (long COVID) in adults – *CMAJ*, Jan. 17, 2023: <https://doi.org/10.1503/cmaj.220823>
- Diagnosis and management of postural orthostatic tachycardia syndrome – *CMAJ*, Mar. 14, 2022: <https://doi.org/10.1503/cmaj.211373>
- COVID-19 Community of Practice for Family Physicians – *Long COVID*, Feb. 24, 2023: <https://www.dfcu.utoronto.ca/past-covid-19-community-practice-sessions; Recording | Session Q&As>