Autonomic Disorders Demystified: Collaborative Protocols in the ER

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Disclosures

I HAVE NO FINANCIAL DISCLOSURES.

Learning Objectives

1. Apply knowledge of autonomic disorders by identifying and differentiating key symptoms, understanding common misdiagnosis, and recognizing the impact on patient quality of life in emergency settings

2. Develop and implement an evidence based protocol designed to systematically assess, manage comment and refer patients presenting with symptoms of autonomic dysfunction

3. Evaluate current practices and enhance interdisciplinary collaboration by identifying roles and responsibilities of various health care providers, including emergency nurse practitioners, common neurologists, cardiologists, and primary care providers, to create a coordinated care pathway that improves patient outcomes

Introduction to Autonomic Disorders

Question to discuss

Have you encountered a patient with suspected autonomic dysfunction?

If so, what challenges did you face?

Breakdown of the Autonomic Nervous System

What is the Autonomic Nervous System?

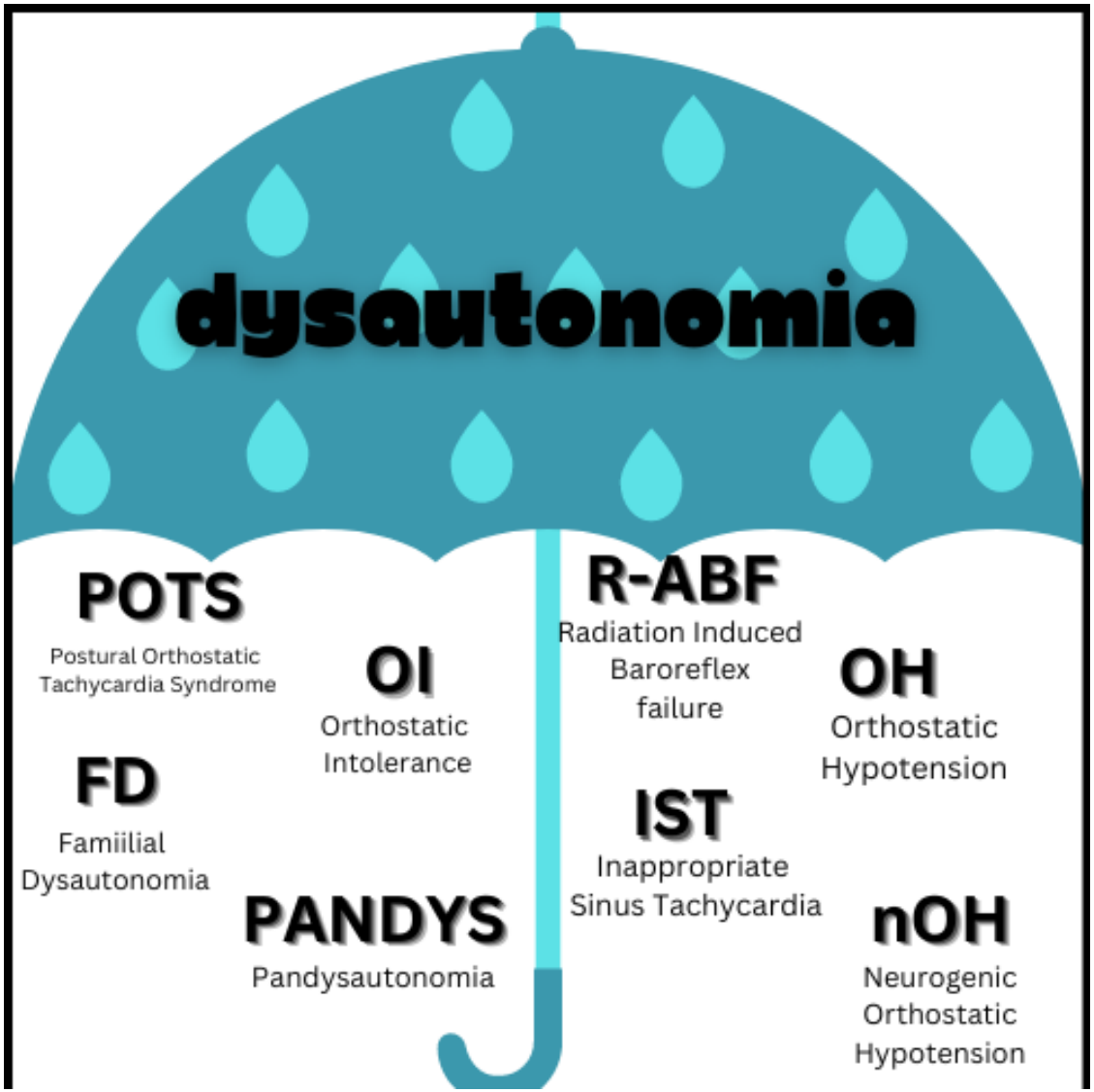
Two Divisions of the ANS

Sympathetic

Parasympathetic

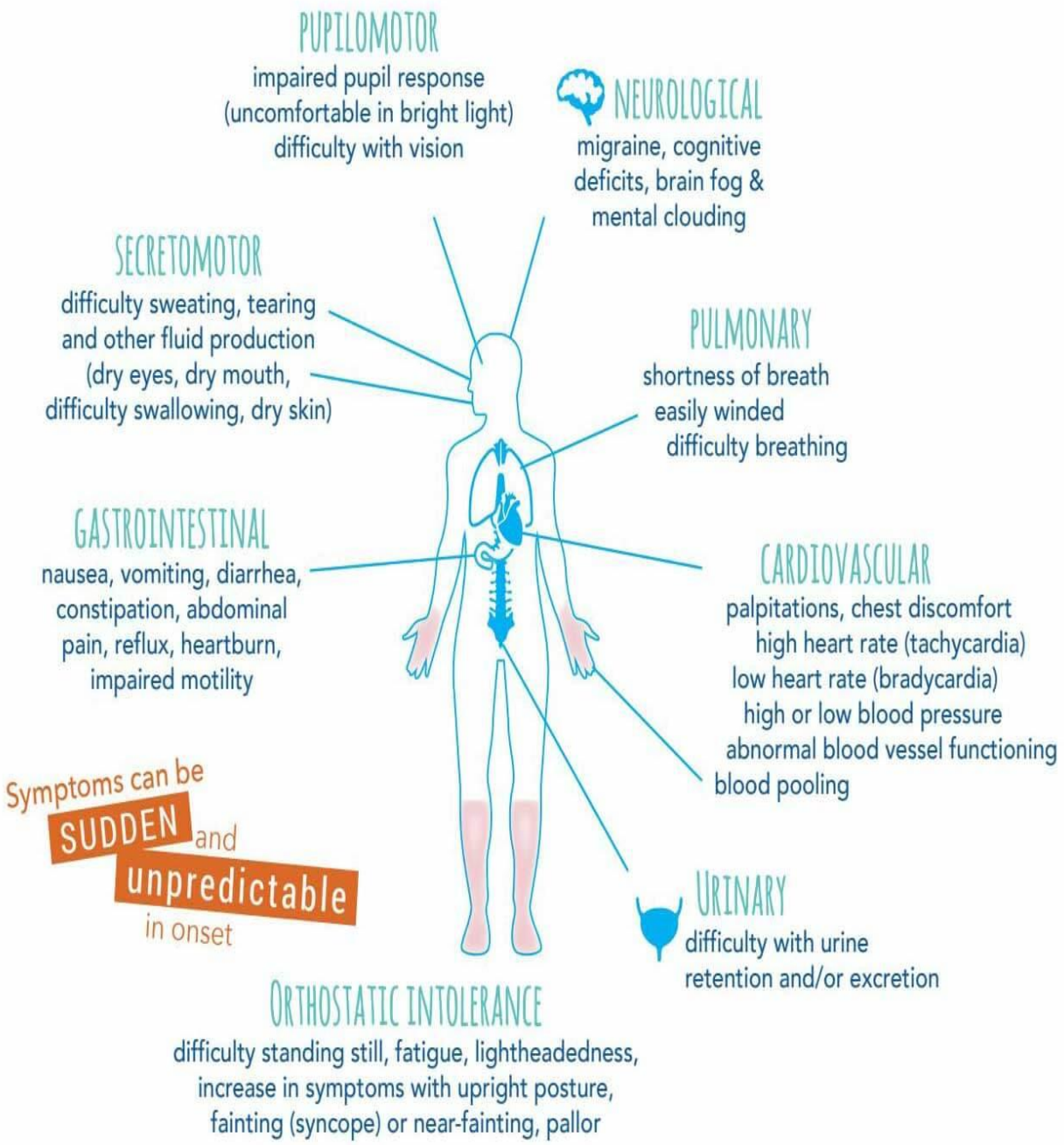
Understanding these divisions is key to recognizing how the ANS regulates our bodies—and what happens when it goes awry.

Autonomic Disorders Overview

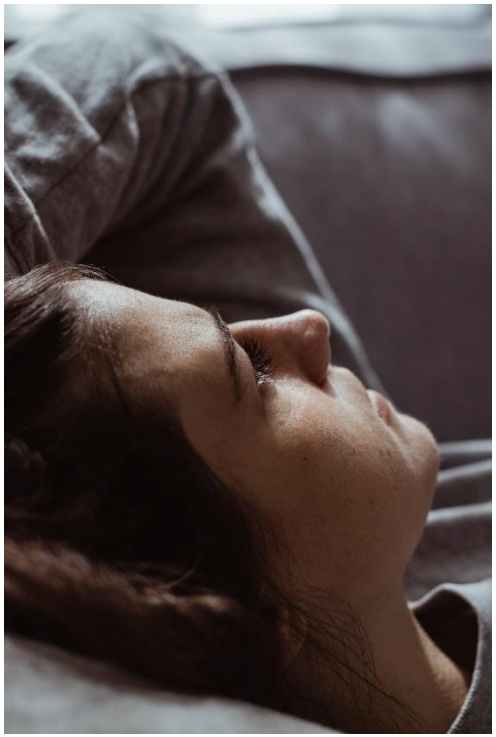


(Chen, et. al, 2020; Cheshire, 2022; Goldstein, 2021)

Autonomic Nervous System Symptom Overview



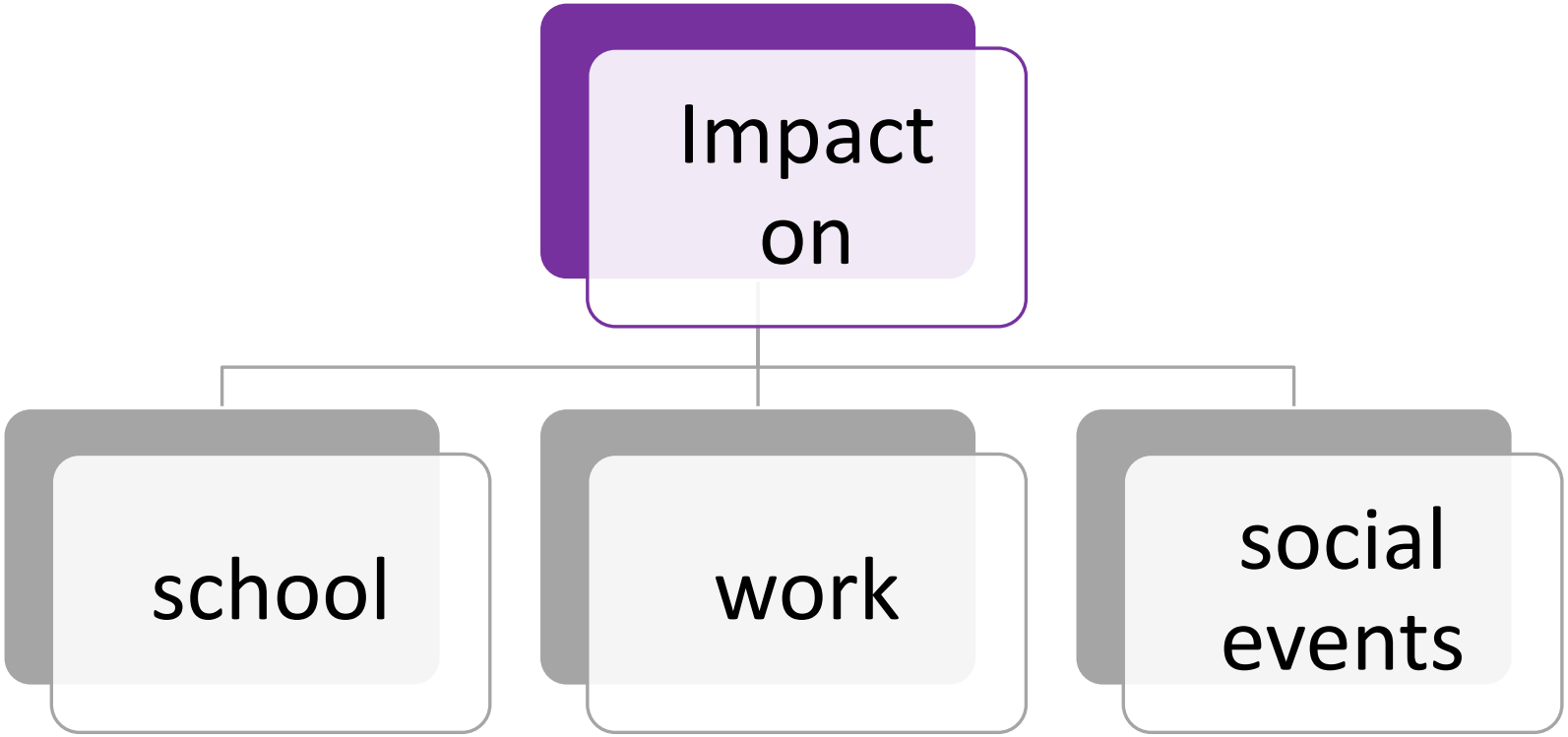
Autonomic Disorder Common Misdiagnosis



Common Misdiagnosis

- Anxiety Disorders
- Dehydration
- Epilepsy
- Cardiac Arrythmias

Impact on Patient Quality of Life



Health Care Burden

- Patients frequently visit the emergency department due to sudden symptom exacerbations or inadequate symptom management.
- This cycle often leads to frustration for both patients and healthcare providers.

The NEED for EARLY Recognition

1. Early Recognition

2. Appropriate Management

3. Improved Outcomes

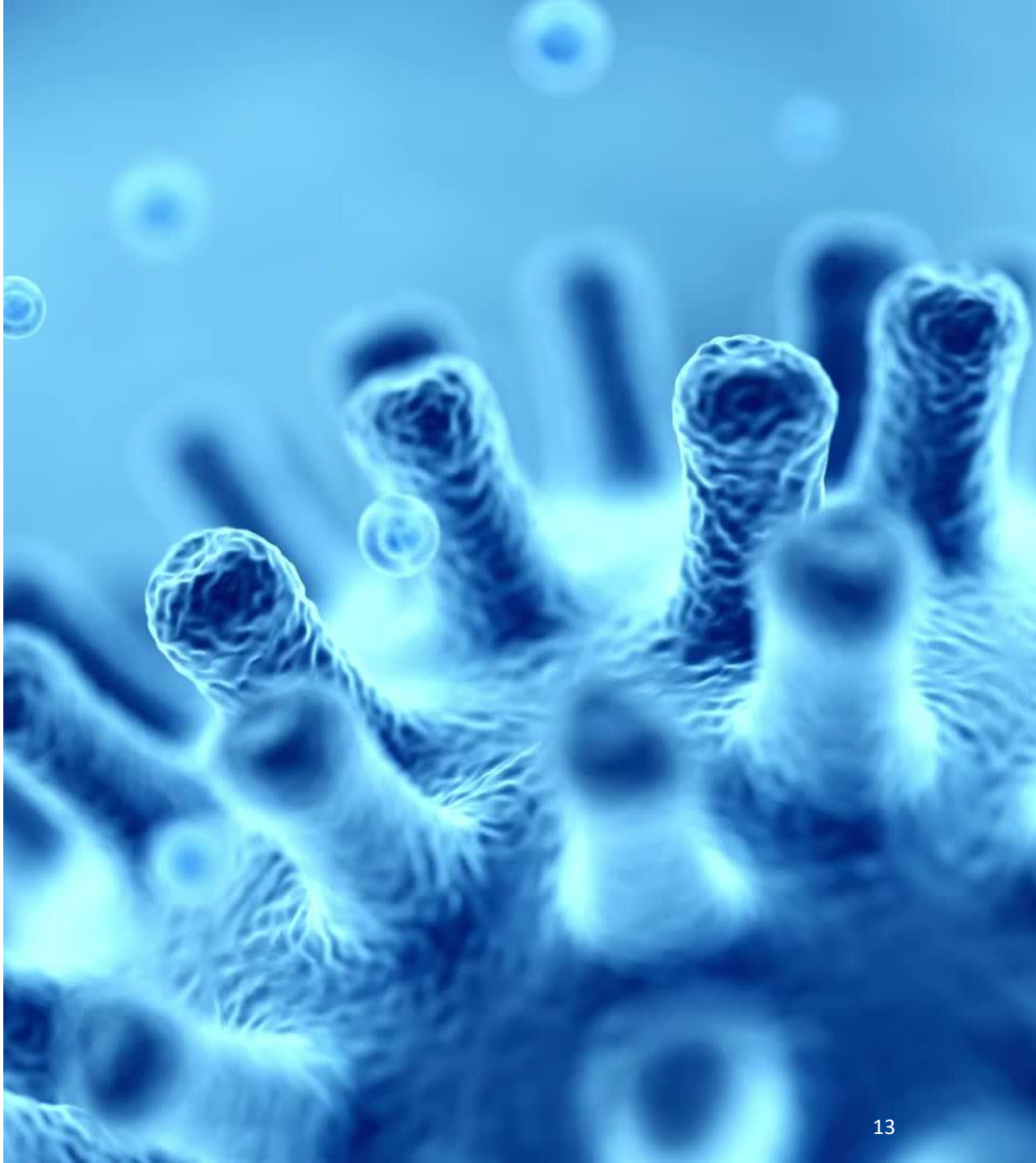
Case Scenario:

A 16-year-old high school athlete presents to the emergency department for evaluation following several fainting episodes during physical activities. Over the past few months, the patient has reported an increasing level of fatigue that worsens as the day progresses, particularly after prolonged standing or intense physical exertion. The patient also experiences intermittent blurred vision, especially right before fainting episodes, which often occur during or immediately after exercise.

Additionally, the patient describes episodes of shortness of breath during exertion, though these are not consistent. They also report palpitations or a racing heart when standing up too quickly, which typically subside after sitting or lying down. These symptoms have significantly impacted the patient's athletic performance, and today was transported after a syncopal episode during conditioning.

Key Autonomic Symptoms

- Fatigue
- Blurred vision
- Shortness of breath
- Palpitations after standing
- Fainting episodes



Medical History:

- **Mild Asthma:** Diagnosed at age 10, but symptoms have been well-controlled without medication use.
- **Hydration:** The patient reports consuming adequate fluids, including water and electrolyte drinks, during physical activities.
- **Family History:** No family history of fainting, arrhythmias, or other cardiovascular or autonomic disorders.
- **Lifestyle:** Active in sports, practices 5-6 days per week, and maintains a balanced diet. Sleep patterns are irregular due to school and athletic commitments.

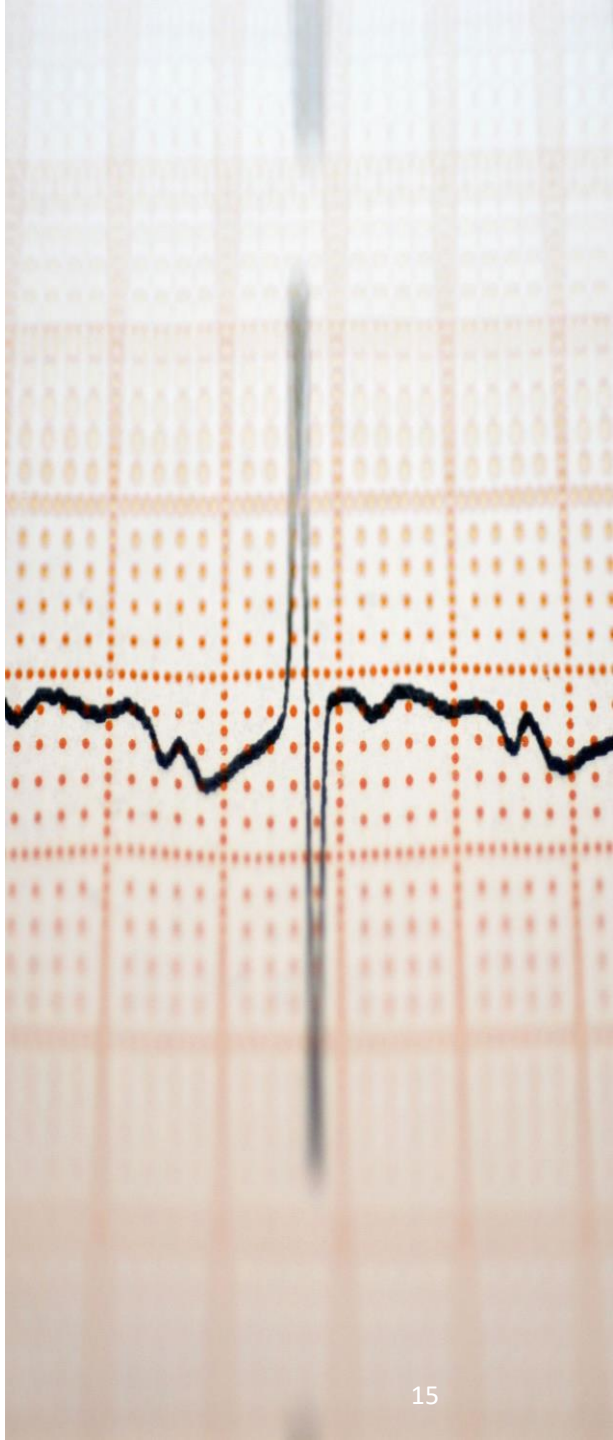
Physical Examination:

- **Vital Signs (Supine):** Normal heart rate and blood pressure.
- **Orthostatic Vital Signs (Standing - 10 minutes):** Significant increase in heart rate (≥30 bpm) without significant drop in blood pressure
- **Cardiac and Respiratory Examination:** Normal, with no murmurs, wheezing, or abnormal findings.
- **Neurological Examination:** Normal.

What are some of your differential diagnoses?

Differential Diagnoses:

1. **Postural Orthostatic Tachycardia Syndrome (POTS):** Autonomic dysfunction resulting in palpitations, dizziness, and fainting with positional changes.
2. **Exercise-Induced Syncope:** May occur due to exertion beyond cardiovascular limits or undiagnosed arrhythmia.
3. **Vasovagal Syncope:** Triggered by physical exertion, emotional stress, or dehydration.
4. **Cardiac Causes:** Although unlikely with normal findings, underlying arrhythmias or structural abnormalities should be ruled out.
5. **Chronic Fatigue Syndrome:** Overlap with fatigue and autonomic symptoms.



What would you include in your diagnostic workup?

Diagnostic Workup:

1. **Orthostatic Vital Signs:** Confirm significant heart rate increase with positional changes.
2. **Electrocardiogram (ECG):** Rule out arrhythmias.
3. **Echocardiogram:** Evaluate for structural heart abnormalities (if indicated).
4. **Tilt-Table Test:** Confirm diagnosis of POTS or other autonomic dysfunction.
5. **Holter Monitor:** Assess for intermittent arrhythmias.
6. **Blood Work:** Rule out anemia, thyroid dysfunction, and electrolyte imbalances.

Management Plan

Example of Compression Stocking Prescription

Patient Name:
Date:
Diagnosis: Autonomic Dysfunction/POTS
Compression Class: 30-40mmHG
Style: Waist stocking # of pairs: 3

APN Name (Print):
APN name (Signature):

1. **Non-Pharmacological Strategies:**
   - Increase salt and fluid intake to support blood volume.
   - Compression stockings to prevent pooling in lower extremities.
   - Gradual positional changes (e.g., avoid standing up too quickly).

- **Pharmacologic Strategies**
  - IV Fluids (1-2L Normal Saline)
  - Beta-Blockers (Propranolol, Metoprolol)
  - Fludrocortisone (Florinef)
  - Midodrine
  - IV/Oral Antiemetics (Ondansetron, Promethazine, Metoclopramide)

- **Exercise Recommendations:**
  - Transition to a graduated exercise program emphasizing recumbent exercises.

- **Lifestyle Adjustments:**
  - Ensure adequate sleep and stress management.

- **Follow-Up:**
  - Monitor symptom progression and evaluate response to interventions.
  - Consider referral to a pediatric cardiologist or neurologist if symptoms persist.

Step-by-Step Guide to Creating ED-Specific Protocols for Autonomic Dysfunction

Identify the Scope of the Protocol

- Define patient population and specific conditions covered.

Conduct a Needs Assessment

- Gather input from ED staff and review recent cases.

Develop Clinical Criteria

- Create a checklist for recognizing autonomic dysfunction.

Establish a Standardized Diagnostic Approach

- Outline key diagnostic steps and necessary tests.

Outline Treatment Protocols

- Define non-pharmacological and pharmacological interventions.

Incorporate Staff Training and Education

- Schedule training sessions and provide ongoing education.

Develop Patient-Centered Communication Tools

- Create discharge handouts and follow-up instructions.

Pilot the Protocol

- Test on a small scale and collect feedback.

Implement and Monitor

- Roll out department-wide and measure outcomes.

Ensure Long-Term Sustainability

Establish a feedback loop and regularly update the protocol.

Interdisciplinary Roles:

Emergency Nurse Practitioners (ENPs)

- Rapid assessment, initial management, referrals

Neurologists

- Diagnostics and treatment planning for synucleinopathies

Cardiologists

- Managing orthostatic intolerance and arrhythmias

Primary Care Providers (PCPs)

- Long-term symptom management and follow-up

Building a Care Pathway

MULTIDISCIPLINARY APPROACH

HOLISTIC CARE

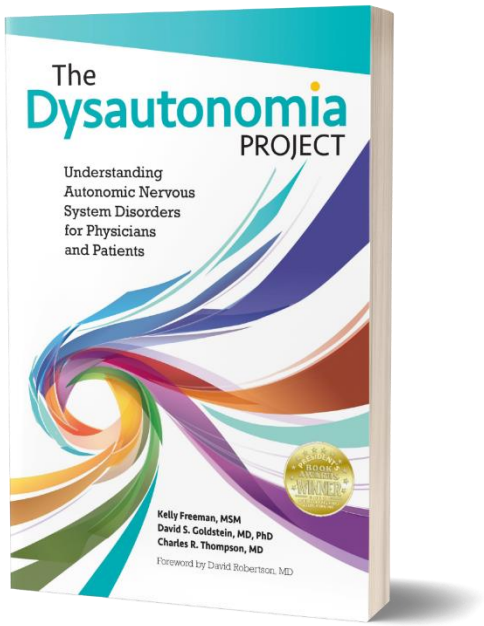
IMPROVED PATIENT OUTCOMES

(Malik et. al, 2024)

Common Gaps in Emergency Care

- Lack of awareness and training
- Symptoms management focus without underlying diagnosis
- Fragmentation of care
- Mismanagement of symptoms

Resources:



PATIENT ORGANIZATIONS

The Dysautonomia Project
Dysautonomia Support Network
Standing Up to POTS
DINET – Dysautonomia Information Network
Dysautonomia Youth Network of America, Inc.
Familial Dysautonomia Foundation
MSA Coalition
National Dysautonomic Research Foundation
STARS – Syncope Trust & Reflex Anoxic Seizures

(Freeman et. al, 2015)

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