Current management of hyperventilation syndrome (HVS)—increasingly referred to as **Breathing Pattern Disorder (BrPD)**—shifts away from acute rescue maneuvers like paper bag rebreathing toward long-term physiological and psychological retraining. Physicians should prioritize ruling out organic pathology, utilizing the **Nijmegen Questionnaire** for screening, and initiating a structured 6-session respiratory physiotherapy program focused on voluntary hypoventilation and diaphragmatic control.

High-Level Actionable Summary for Physicians

- **Screening & Diagnosis:** Utilize the Nijmegen Questionnaire (score >23 suggests HVS) and the Hyperventilation Provocation Test (HPVT) to reproduce symptoms. Always exclude cardiac, pulmonary, and metabolic causes first.
- **Terminology Shift:** Adopt the term Breathing Pattern Disorder (BrPD) to facilitate multidisciplinary care (Physiotherapy, Psychology, and Primary Care).

- **Primary Intervention:** Refer to specialized respiratory physiotherapy. Evidence from 2025 studies supports a 6-session program (weekly) involving education, diaphragmatic breathing, and voluntary hypoventilation.[1]
- **Pharmacotherapy:** For patients with significant comorbid anxiety or frequent attacks, consider SSRIs (first-line) or low-dose beta-blockers (e.g., bisoprolol) to reduce sympathomimetic tone.
- **Safety Warning:** Explicitly discontinue the use of paper bag rebreathing, as it is outdated and potentially dangerous in patients with underlying organic disease (e.g., MI, PE, or asthma).

Detailed Clinical Insights and Guidelines

1. Terminology and Diagnostic Standards

Recent consensus has moved toward the nomenclature of Breathing Pattern Disorder (BrPD). A 2025 international consensus study (University of Essex/Imperial College London) achieved 71% agreement on this term to better describe abnormal breathing patterns that are not fully explained by pathophysiology.[2]

The French National Authority for Health (HAS, 2023) recommends assessing the Nijmegen score in all patients with persistent dyspnea following COVID-19, as HVS/BrPD has been identified as a key mechanism in post-acute sequelae of SARS-CoV-2. Diagnosis is further supported by detecting hypocapnia (low PetCO2) during episodes or induction.

2. Specialized Respiratory Physiotherapy (2025 Evidence)

Evidence from 2025 observational and systematic reviews highlights that physiotherapy is the cornerstone of management. A standardized program typically includes:

- **Education:** Explaining the physiological basis of hypocapnia and symptom generation.

- **Breathing Retraining:** Transitioning from apical (upper chest) to diaphragmatic breathing.
- **Voluntary Hypoventilation**: Training the patient to tolerate higher CO2 levels and reduce respiratory frequency.
- **Outcome Data:** A 2025 study (University of Toronto) demonstrated that six sessions significantly decreased Nijmegen scores (mean decrease of 11.6 points) and improved quality of life, with benefits maintained at a 3-month follow-up.

3. Psychological and Cognitive Behavioral Therapy (CBT)

CBT is increasingly integrated into the management of HVS, particularly when symptoms are linked to panic disorder. A 2024 study on high-altitude respiratory patients demonstrated that CBT reduces overall oxygen consumption (VO2) and minute ventilation by alleviating anxiety and downregulating sympathetic tone.

The **Delphi Study ** identified five essential components for treating BrPD:[3]

1. Comprehensive assessment
2. Breathing retraining (with or without biofeedback)
3. Patient education
4. Manual therapy (to address musculoskeletal restrictions in the chest wall)[6][4]
5. Psychological therapy

4. Pharmacological Management

While non-pharmacological methods are primary, medication may be indicated for patients who do not respond to retraining alone:[4][5]

- SSRIs: Indicated if GAD-7 scores are $\geq$10 or if HVS is a manifestation of panic disorder.[5]
- Beta-Blockers: Bisoprolol (e.g., 5 mg daily) has been used to reduce the frequency of attacks by modulating the autonomic response.

- Benzodiazepines: Restricted to short-term, acute rescue in the emergency setting; long-term use is generally discouraged due to dependence risks.

5. Summary of Essential Treatment Components (2026 Consensus)

Component	Level of Evidence/Consensus	Goal
Respiratory Education	Essential (Delphi 2026)	Reattribute symptoms to breathing mechanics rather than organic disease.
Breathing Retraining	Essential (HAS 2023)	Establish an abdominal pattern and slow respiratory rate.
CBT / Psychological	Essential (2024/2025)	Address interoceptive awareness and catastrophic cognitions.
Home Practice	Essential (Delphi 2026)	Ensure generalization of techniques to daily life.
Paper Bag Rebreathing	Contraindicated	Avoid the risk of hypoxia and the masking of organic emergencies.

6)References (6)

[1]Physiotherapy assessment of breathlessness and disordered patterns of breathing: Defining a consensus on terminology and assessment. Grillo LJ; Easton I; Schreuder FM; Lewis A; Bloom CI; Hopkinson NS; Shannon H; Russell AM

Chronic respiratory disease 2025, Q2H-index: 54

[2] Nonpharmacological Interventions for Dysfunctional Breathing in Adults: A Systematic Review.

Bondarenko J; Burge AT; Bremner J; Webb E; Nakazawa A; Corso SD; Pepin V; Button B; Hew M; Holland AE

The journal of allergy and clinical immunology. In practice 2025-08 ,Q1H-index: 350

[3] Optimal Treatment for Dysfunctional Breathing in Adults: An International Delphi Study.

Bondarenko J; Bremner J; Button B; Hew M; Holland AE Clinical and experimental allergy : journal of the British Society for Allergy and Clinical Immunology 2026-05, Q1H-index: 350

[4] [Hyperventilation syndrome, definition, diagnostic, and therapy]. Selleron B; Chenivesse C Revue des maladies respiratoires 2023-06, Q4H-index: 342 citations

[5] Voluntary hyperventilation in the treatment of panic disorder--functions of hyperventilation, their implications for breathing training, and recommendations for standardization. Meuret AE; Ritz T; Wilhelm FH; Roth WT Clinical psychology review 2005-05 ,Q1H-index: 15821 citations

[6] Cognitive behavioral therapy enhances psychological and physiological outcomes in high-altitude respiratory patients De-Feng Meng; Dong-You Zhang; Fan Yang; Peng-Li Meng; Ting-Ting Wen; Yu-Zhao Wang World Journal of Psychiatry 2026 , Q1H-index: 153