


**TABLE 8: Symptom-specific assessment and management considerations for breathing discomfort and respiratory sequelae in patients with Long COVID**

Assessment Element	Assessment Details
<b>History</b> 	<ul style="list-style-type: none"> <li>Pulmonary history of acute COVID-19 course: <ul style="list-style-type: none"> <li>Desaturation? Supplemental O<sub>2</sub>? ICU? Mechanical ventilation?</li> </ul> </li> <li>Document character and severity of breathing discomfort <ul style="list-style-type: none"> <li>At rest or with exertion? Relieved with rest? Chest tightness or air hunger?</li> </ul> </li> <li>Assess for non-pulmonary contributors that could also limit activity (e.g., fatigue, PEM/PESE, autonomic, neurologic, cardiovascular, neuromuscular)</li> </ul>
<b>Physical exam</b>	<ul style="list-style-type: none"> <li>Vital signs: <ul style="list-style-type: none"> <li>HR, RR, BP, POx (on room air, at rest, and while walking at a pace/duration tolerated by the patient)</li> </ul> </li> <li>Cardiopulmonary exam: <ul style="list-style-type: none"> <li>Assess for crackles, use of accessory breathing muscles, peripheral edema, acrocyanosis</li> <li>Assess for JVD, split P2, peripheral edema</li> </ul> </li> <li>Peripheral vascular perfusion and skin integrity</li> </ul>
Treatment Element	Treatment Details
<b>Non-pharmacologic management</b>	<ul style="list-style-type: none"> <li>Pulmonary rehabilitation (PR)<sup>80-82</sup> <ul style="list-style-type: none"> <li>Covered by Medicare and many other insurance plans for COVID-19 related pulmonary disorders</li> <li>At-home PR programs are covered by some insurance plans</li> <li>Use caution if coexisting PEM/PESE, and modify program accordingly</li> </ul> </li> <li>If symptoms are improving or supervised rehabilitation is not available: <ul style="list-style-type: none"> <li>Breathing techniques and self-monitored paced physical activity (See Figure 1)</li> <li>Consider self-directed educational resources or online programs</li> <li>For patients with phone-based or wearable activity trackers, use data to track progress of therapy</li> </ul> </li> <li>If chronic productive cough, difficulty clearing airway secretions, or bronchiectasis: <ul style="list-style-type: none"> <li>Airway clearance techniques, and consider prescribing an airway clearing device<sup>83</sup></li> </ul> </li> <li>If requires home oxygen (to maximize mobility, quality of life, and participation in rehabilitation): <ul style="list-style-type: none"> <li>Portable oxygen device, when possible</li> </ul> </li> <li>Consider a home peak flow meter to track progress and quantify the impact of respiratory infection or another setback</li> </ul>
<b>Pharmacologic management</b>	<ul style="list-style-type: none"> <li>If evidence of impaired pulmonary function, consider oral corticosteroids, inhaled bronchodilators, and inhaled corticosteroids <ul style="list-style-type: none"> <li>Not for isolated breathing discomfort</li> </ul> </li> </ul>
<b>Referral, as needed</b>	<ul style="list-style-type: none"> <li>To pulmonary medicine, if: <ul style="list-style-type: none"> <li>Breathing discomfort is progressing or limiting activity</li> <li>Productive cough and/or difficulty clearing airway, persistent and unexplained pulmonary exam abnormalities, new or worsened O<sub>2</sub> desaturation with activity, or new or worsened PFT or imaging abnormalities</li> </ul> </li> <li>To pulmonary rehabilitation (PR), if: <ul style="list-style-type: none"> <li>Recent diagnosis of a qualifying condition (i.e., history of Long COVID with abnormal PFTs or exercise test, interstitial disease on imaging, functional limitations and associated dyspnea from oxygen desaturation with exertion or at rest)</li> <li>If pulmonary rehabilitation is unavailable, consider PT with supplemental oxygen for conditioning and OT for ADL training</li> </ul> </li> <li>For patients with mild limitations such that insurance may not cover PR, PT, or OT, consider a gentle return-to-activity program in a gym with a certified athletic trainer (See Figure 1 for return to activity guidance)</li> <li>To otolaryngology, if abnormal upper airway breath sounds or voice changes (e.g., stridor, hoarseness, unexplained episodic breathing discomfort, especially if history of endotracheal intubation and/or tracheostomy)</li> </ul>

Abbreviations: O<sub>2</sub> (oxygen), ICU (intensive care unit), PEM (post-exertional malaise), PESE (post-exertional symptom exacerbation), HR (heartrate), RR (respiratory rate), BP (blood pressure), POx (pulse oximetry), JVD (jugular venous distension), PR (pulmonary rehabilitation), PFT (pulmonary function test), PT (physical therapy), OT (occupational therapy), ADL (activities of daily living).

