








TABLE 3: Labs and procedures (See Table 1 for differential diagnoses)

Symptom Category	Assessment Details
Holistic assessment (Recommended for all patients)	<ul style="list-style-type: none"> To rule out other (potentially treatable) conditions** <ul style="list-style-type: none"> CBC with diff; CMP; TSH Also consider: ESR; CRP; CK; vitamins D, B1, and B12
Physical fatigue 	<ul style="list-style-type: none"> To identify treatable contributors, consider: <ul style="list-style-type: none"> Ferritin, iron profile Testosterone, estradiol⁵⁴
Breathing and respiratory sequelae 	<ul style="list-style-type: none"> If not already performed, consider: <ul style="list-style-type: none"> Chest XR If breathing discomfort not improving ≥ 8 weeks after acute COVID-19 infection, or if new/worsened breathing discomfort later in Long COVID course, consider: <ul style="list-style-type: none"> PFTs (FEV1/VC and DLCO) EKG, echocardiogram If pulmonary exam, chest XR, or PFT abnormalities, consider: <ul style="list-style-type: none"> Non-contrast chest CT
Cardiovascular complications[§] 	<ul style="list-style-type: none"> If chronic chest pain present and concern for myocarditis, consider: <ul style="list-style-type: none"> Troponin (preferably high-sensitivity) If concern for decompensated heart failure, consider: <ul style="list-style-type: none"> BNP (preferably NT-proBNP) If concern for PE, consider: <ul style="list-style-type: none"> D-dimer If not already performed, consider: <ul style="list-style-type: none"> EKG, chest XR Cardiac MRI (for myocarditis, if chronic chest pain and positive troponin) Echocardiogram (for heart failure/valve abnormalities) CT PE protocol (for PE) If concern for arrhythmia, consider: <ul style="list-style-type: none"> Holter monitor for symptoms nearly daily 14-day monitor for symptoms every few days Implantable event monitor for infrequent symptoms If initial work-up is unrevealing and/or to guide activity plan, consider: <ul style="list-style-type: none"> Cardiopulmonary stress test
Autonomic dysfunction 	<ul style="list-style-type: none"> If concerned for PE, consider D-dimer To identify treatable contributors, consider if relevant: * <ul style="list-style-type: none"> Autoimmune: ANA, RF, Sjogren's Syndrome panel, antiphospholipid antibodies Iron deficiency: Ferritin, iron profile If recurrent palpitations, tachycardia, or syncope, consider basic cardiac work-up (See Table 9 [Cardiac table]) If negative 10-minute stand test, consider tilt table test <ul style="list-style-type: none"> Tilt table test is not required to diagnose or treat autonomic dysfunction and can cause a symptom flare
Cognitive impairment 	<ul style="list-style-type: none"> To rule out other conditions, consider: <ul style="list-style-type: none"> Thiamine, folate, homocysteine, magnesium, RPR, HIV Neuroimaging based on history, exam, and lab findings
Mental health 	(See Table 12 for mental health screening tools)
Neurologic sequelae 	<ul style="list-style-type: none"> To rule out other conditions, consider: <ul style="list-style-type: none"> HgbA1c, vitamin B6, magnesium, RPR, HIV Consider neuroimaging based on history, exam, and lab findings <ul style="list-style-type: none"> Consider consultation with a neurologist to guide imaging and further testing



*At this time, no single laboratory finding is definitively diagnostic for confirming or ruling out the diagnosis of Long COVID. However, in some research studies, Long COVID has been associated with low morning cortisol and serotonin levels; EBV reactivation; and high IL-6, TNF- α , and D-dimer levels. Some of these labs are predominantly used in research settings and are not readily available for clinical use. Additionally, sensitivity and specificity values have not been determined, and treatments based on these laboratory findings have not been studied.

*Laboratory assessment for MCAS is not necessary prior to an empiric trial of H1 and H2 antihistamines and can be normal even when mast cell dysfunction is present. When laboratory workup is felt to be indicated, it includes: 1) serum tryptase (baseline level several days between any episodes and another level within 4 hours after the start of an episode), and 2) 24-hour urine N-methylhistamine, 11 β -Prostaglandin F $_{2\alpha}$, and/or Leukotriene E $_4$ (collection beginning immediately after the start of an episode). (See <https://www.aaaai.org/conditions-treatments/related-conditions/mcas>).

§Elevated hs-CRP is associated with chronic inflammation and potentially increased risk of cardiovascular complications in Long COVID.^{65,66} Checking hs-CRP can be considered in patients who have a history of severe acute COVID-19 infection, other cardiovascular risk factors, and/or persistent cardiovascular symptoms. However, a patient's hs-CRP level, by itself, would not necessarily change cardiovascular management.

Abbreviations: CBC with diff (complete blood count with differential), CMP (complete metabolic panel), TSH (thyroid stimulating hormone), ESR (erythrocyte sedimentation rate), CRP (C-reactive protein), CK (creatin kinase), XR (radiograph), PFTs (pulmonary function tests), FEV1 (forced expiratory volume in one second), VC (vital capacity), DLCO (diffusion capacity of the lungs for carbon monoxide), EKG (electrocardiogram), CT (computed tomography), BNP (B-type natriuretic peptide), NT-proBNP (N-terminal pro-BNP), MRI (magnetic resonance image), PE (pulmonary embolism), ANA (antinuclear antibody), RF (rheumatoid factor), PTSD (post-traumatic stress disorder), RPR (rapid plasma reagin), HIV (human immunodeficiency virus), HgbA1c (hemoglobin A1c), AM (morning), EBV Ab (Epstein-Barr Virus antibody), TNF (tumor necrosis factor), MCAS (mast cell activation syndrome), hs-CRP (high-sensitivity C-reactive Protein).

