**WHO Clinical Case Definition:**
- Post-COVID-19 Condition occurs in individuals with a history of SARS-CoV2 infection (usually 3 months from the onset of COVID) with symptoms that last for ≥ 2 months and cannot be explained by an alternative diagnosis.

**Presentation**
- Wide spectrum of symptoms with multi-organ system involvement
- Common symptoms include fatigue, shortness of breath, and cognitive dysfunction and generally have an impact on everyday functioning
- Symptoms may persist from initial illness or develop following initial recovery
- Severity of initial COVID illness does not correlate with post-COVID symptoms
- Symptoms often wax and wane
- Symptoms may include unmasking of underlying conditions
- Symptoms often include a strong psychosocial component

**Evaluation**
- Evaluate physical, social and psychological consequences and functional limitations
- Conduct limited work up focusing on major symptomatology
- Avoid excess testing, as labs and imaging are often normal
- Cognitive testing can identify true deficits
- Address mental health and sleep disturbances

**Children and Teens**
- Post-viral hyper responsiveness common - exacerbated by those with atopic histories, smoking parent, asthma
- Increased anxiety and depression
- Cognitive changes most challenging
- May see unmasking of diabetes

**Treatment**
- Multi-disciplinary approach with focus on healing rather than therapies
- Supportive provider system is essential
- Gradual increase in activity – low impact exercise is beneficial
- Address mental health and sleep disturbances
- Role of Integrative therapies for treating pain and fatigue
- Refer only medically complex patients to specialty Long-COVID Clinics

**Specialty Long-COVID Clinics**
- UCSD Post-COVID Care
- Scripps COVID Recovery Program
- Post-COVID Care Centers in California

**RANGE OF SYMPTOMS:**
- Fatigue (58%)
- Headache (44%)
- Attention Deficit (27%)
- Hair Loss (25%)
- Dyspnea (24%)
- Ageusia (23%)
- Anosmia (21%)
- Polyneuropathy (21%)
- Cough (19%)
- Joint Pain (19%)
- Sweat (17%)
- Memory Loss (16%)
- Nausea (16%)
- Chest Pain (16%)
- Hearing Loss (15%)
- Anxiety (13%)
- Depression (12%)
- Digestive Disorders (12%)
- Cutaneous Signs (12%)
- Palpitations (11%)
- Resting HR increase (11%)
- Fever (11%)
- Sleep Disorder (11%)
- Weight Loss (12%)
- Pain (11%)


**Resources**
- **Support Groups**
  - Survivor Corps
  - Long-COVID Alliance
  - Support Group — Body Politic
  - Long COVID Kids Post COVID Syndrome
  - How Right Now - CDC campaign to promote emotional well-being

- **Patient Resources**
  - Caring for People with Post-COVID Conditions
  - Post-COVID Conditions
  - Long COVID Communications Toolkit

For the latest updates on COVID-19, visit: www.sandiegocounty.gov/COVIDHealthProfessionals
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<thead>
<tr>
<th>System</th>
<th>Presentation</th>
<th>Evaluation/Treatment</th>
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| **Pulmonary**        | • Primary symptoms of cough, shortness of breath, fatigue, chest pain and decreased exercise tolerance  
|                      | • Secondary symptoms of palpitations, dizziness, anxiety can be exacerbated by shortness of breath  
|                      | • Laryngo-Pharyngeal Reflux (LPR) may lead to cough and reactive airway symptoms  
|                      | • Chest myopathy from COVID-19 skeletal muscle injury and viral airway hyperresponsiveness contribute  
|                      | • Alarm cytokines, vagal nerve inflammatory mediators, and vocal cord dysfunction may be implicated  | • Pulmonary function tests may be normal  
|                      |                                                                              | • Evaluate Sleep apnea – especially in those reporting fatigue  
|                      |                                                                              | • Treat (LPR) reflux – diet and lifestyle changes and alginates  
|                      |                                                                              | • Pulmonary Rehab may be beneficial  
|                      |                                                                              | • Gradual increase in physical activity  |
| **Cardiology**       | • Chest discomfort and palpitations  
|                      | • Dysautonomia (tachycardia and orthostasis)  
|                      | • Exercise Intolerance  
|                      | • Postural Orthostatic Tachycardia Syndrome (POTS) may be precipitated by cardiac deconditioning. Occurs typically in females of childbearing age  
|                      | • Important to evaluate for hypertrophic cardiomyopathy, particularly in young athletes  
|                      | • Resolution of symptoms generally a very slow process  | • EKG may show tachycardia or PVCs  
|                      |                                                                              | • Echocardiogram typically normal  
|                      |                                                                              | • Orthostatic VS and if needed tilt-table testing  |
| **Rheumatology**     | • Fatigue and pain - joint pain, localized point pain-especially back and neck  
|                      | • Some develop autoimmune disease post COVID  
|                      | • Myalgic Encephalomyelitis/Chronic Fatigue Syndrome - post exertion worsening of symptoms, unrefreshing sleep, cognitive impairment  
|                      | • Fibromyalgia – pain generalized, fatigued, unrefreshing sleep (female and prior use of corticosteroids increases risk)  
|                      | • Triggers for relapse: physical activity, stress, exercise, mental activity, menstruation  
|                      | • Important to exclude autoimmune disorders that may mimic Long COVID  
|                      | • Collaborative supportive care  | • Mindfulness, acupuncture, graduated exercise program, (water, gentle resistance work, Pilates, Zumba)  
|                      |                                                                              | • Electrotherapy- TENS for localized pain  
|                      |                                                                              | • Replace low Vit D, Mg (may help with HA and pain in some)  
|                      |                                                                              | • Amitriptyline (good with poor sleep), duloxetine  
|                      |                                                                              | • For neuropathic symptoms: gabapentin, pregabalin  |
| **Neurology**        | • Neuro symptoms are disabling but poorly defined  
|                      | • Poor cognitive performance, attention deficit, memory deficit, abnormal sensation, ataxia  
|                      | • Females at greater risk  
|                      | • Imaging shows vulnerable brain regions involved in memory, attention and executive function  
|                      | • Pathogenesis – autoimmunity, endothelial dysfunction  | • Multiple treatments under investigation  
|                      |                                                                              | • Vaccine may be protective of neurologic sequelae  
|                      |                                                                              | • Improvement in 6-12 months in many but not all  |
| **Emotional and Mental Health** | • Traumatized with memories of illness, PTSD  
|                      | • Disturbed by cognitive symptoms – brain fog  
|                      | • Frustrated, angry, sleep deprived and frightened  
|                      | • Mal feel that symptoms will never resolve  
|                      | • Anxiety and Depression may develop in one-third of individuals at 6 months post COVID in those with prior history  
|                      | • Females at higher risk  
|                      | • Important to address cognitive impairments  | • Cognitive Behavioral Therapy  
|                      |                                                                              | • Breath retraining and relaxation  
|                      |                                                                              | • Physical activity  
|                      |                                                                              | • Natural sunlight helps regulate mood and sleep  
|                      |                                                                              | • Address sleep hygiene  
|                      |                                                                              | • Compensatory cognitive training for brain fog  
|                      |                                                                              | [www.cogsmart.com](http://www.cogsmart.com)  |

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