What are the risk factors for long-COVID-19 disease/post-COVID syndrome (PCS)?

What the research says
The identification of risk factors for long-COVID/PCS is challenging. Further data and longer-term follow-up are needed to better define those risk factors that offer the best predictive value for ongoing symptoms and whether different risk factors apply to different patient populations. Long-COVID/PCS is not limited to patients with severe acute illness and may emerge following even a mild COVID-19 illness. Female sex, increasing age and a higher number of symptoms during the acute illness appear to be predictive risk factors for long-COVID/post-COVID syndrome (PCS). Increased levels of D-dimer or C-reactive protein or reduced lymphocyte count during acute illness may also be predictive risk factors (Yong 2021).

Other factors that may contribute to the emergence of long-COVID/PCS but require further research to confirm their predictive value include:

- Pre-existing comorbidity
- Prior psychiatric disorder
- Increased levels of IL-6, procalcitonin, troponin-1, blood urea nitrogen, or neutrophil count during acute illness

While prolonged organ-related symptoms can be expected following severe COVID-19, research is ongoing to determine whether any risk factors can be related to specific post-COVID symptoms for those with mild or moderate acute illness. One study has suggested that female sex and a diagnosis of anxiety and depression or antidepressant use may be a risk factor for persistent fatigue (Yong et al 2021).

What this means for your clinical practice
- Continue to follow-up with patients once they recover from acute COVID-19 illness of any severity, with particular vigilance for symptoms persisting beyond 12 weeks from onset of the acute illness
- Maintain particular vigilance for PCS among older, female patients and those with multiple symptoms during the acute phase of the illness

For additional guidance on the management of post-COVID symptoms and respiratory-related post-COVID symptoms refer to What medicines are available to treat an acutely unwell person with COVID-19 in the primary care setting to reduce the risk of hospitalisation?.
### Risk factors for the evolution of long-COVID/Post-COVID Syndrome

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<table>
<thead>
<tr>
<th>Study</th>
<th>Patient cohort Details</th>
<th>Diagnosis Details</th>
<th>Definition of long-COVID/PCS</th>
<th>Risk factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jones et al 2021</td>
<td>18–85 years</td>
<td>Self-diagnosis, clinician diagnosis or PCR confirmation</td>
<td>Self-reported symptoms lasting ≥4 weeks</td>
<td>Age ≥40 years, female sex, frailty, visit to A&amp;E, hospital admission for COVID-19</td>
</tr>
<tr>
<td>Moreno-Perez et al 2021</td>
<td>Adults recovered from acute COVID-19</td>
<td>PCR confirmed</td>
<td>Persistence of at least one clinically relevant symptom 10–14 weeks after disease onset, or abnormalities in spirometry or chest radiography</td>
<td>No baseline clinical features were independent predictors of PCS development</td>
</tr>
<tr>
<td>Peghin et al 2021</td>
<td>Adult inpatients and outpatients</td>
<td>Not defined</td>
<td>COVID-19 symptoms 6 months after disease onset</td>
<td>Female sex, higher number of symptoms at onset, ICU admission</td>
</tr>
<tr>
<td>Sudre et al 2020</td>
<td>Adult user of the COVID Symptom Study app</td>
<td>Self-reported lateral flow test positive</td>
<td>Symptoms lasting &gt;28 days</td>
<td>Increasing age, increasing BMI, female sex, experiencing &gt;5 symptoms during the first week of illness</td>
</tr>
<tr>
<td>Osmanov et al 2021</td>
<td>Children admitted to hospital with confirmed COVID-19</td>
<td>PCR confirmed</td>
<td>Persistent symptoms &gt;5 months</td>
<td>Older age (6–11 years and 12–18 years) and a history of allergic diseases</td>
</tr>
</tbody>
</table>

BMI, body mass index; ICU, intensive care unit; PCR, polymerase chain reaction; PCS, post-COVID syndrome.
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Useful links and supporting references


Authors

Dr Fiona Mosgrove (GP and Clinical Lead Grampian Respiratory Improvement Programme, Aberdeen, Scotland, UK) for and on behalf of the IPCRG practice driven answers review group.