LONG COVID: WHAT IS KNOWN TO DATE
A BRIEFING PAPER FOR NPHET

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Background
There is emerging evidence of longer-term effects of infection with Sars-CoV-2 but little higher quality evidence with most studies based on observation. One recent prospective study in hospitalised patients points towards residual effects in hospitalised patients lasting for more than 3 months in more than 70% of those studied and an unpublished Irish study of HCWs suggests residual symptomatology in 80% of Covid +ve HCWs after 3 months. Both studies are limited by responder bias. An evidence synthesis published by HSE Library in Oct 2020 describes similar symptomatology across the range of observational studies to those noted in the more recent studies. This brief paper will describe updated terminology, a description of commonly described symptoms, current management and conclude with a HCW case study.

Terminology/Definitions
**Post-Acute Covid:** Symptoms for up to 12 weeks following known infection with Sars-CoV-2.
**Long Covid/Post-Acute Sequelae of Covid (PASC):** Symptoms after 12 of known infection. ‘Long Covid’ is a term coined by social media and PASC is the terminology used by NIH.

Symptoms and Management

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Types</th>
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<tbody>
<tr>
<td>Generalised</td>
<td>Fatigue*</td>
</tr>
<tr>
<td>Respiratory</td>
<td>Cough*; SOB</td>
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<tr>
<td>Cardiovascular</td>
<td>Chest tightness; chest pain</td>
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<tr>
<td>Neuro/Cognitive</td>
<td>Sleep disturbance*, brain fog, headache*, impaired concentration</td>
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<tr>
<td>Gastrointestinal</td>
<td>Abdominal pain; constipation, N&amp;V</td>
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<tr>
<td>MSK</td>
<td>Joint pain*; joint swelling; muscle pain; limb weakness*</td>
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<tr>
<td>ENT</td>
<td>Change to smell and/or taste; tinnitus; sore throat</td>
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<tr>
<td>Psychological/Psychiatric</td>
<td>Anxiety; fluctuating mood</td>
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<tr>
<td>Dermatology</td>
<td>Skin rashes; toe lesions</td>
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Most commonly reported.
A wide range of symptoms have been described ranging across multiple body organs and systems, with causes as yet unknown. The symptom complex is variable, can be isolated to a single system/organ or multiple systems/organ and are similar to the ranges of symptoms described in other post-viral and Chronic Fatigue Syndromes. Symptom ‘clustering’ has been described, with constellations of some symptoms more commonly co-occurring:

- Cluster A: Fatigue, SoBoE, headache, dizziness, myalgia, joint pain, balance disturbance and limb weakness.
- Cluster B: a ‘nest’ of A symptoms; myalgia, joint pain, balance disturbance and limb weakness,
- Cluster C: loss of smell and taste, difficulty passing urine, disturbed appetite and weight loss.

Clinical management is currently based on symptomatology and includes pulmonary rehabilitation, physiotherapy (particularly for deconditioned older people), symptomatic management of shortness of breath, and beta blockers for tachycardia. Current clinical advise includes rests during the acute recovery period, however a gradual rehabilitation approach is likely to be more suitable for PASC.

British Prospective Study
Multi-centre prospective trial examining those who survived hospital admission. Key findings included:

- 50% reported not feeling fully recovered, mean FU 7/12.
- 75% experienced fatigue and 25% described a new disability in sight, cognition, walking, self-care.
- Outcomes worse in females under 50 y.o. (5:1 F:M); not related to age when infection acquired and not related to previous co-morbidities.
- Incomplete recovery 4 times more likely in those who required invasive ventilation.

Irish Context
Of the 232,164 cases confirmed cases in Ireland to date, 15,848 of those were HCWs (13/03/21).

Unpublished retrospective study of HCWs found:

- 83% reported incomplete recovery at 3-6/12
- 73% reported residual symptoms at 3-6/12.

Age, gender, existing co-morbidities and duration of initial infection were not correlated with ongoing symptoms.

A support group, [https://www.covidcasesireland.ie/](https://www.covidcasesireland.ie/) was set up in June 2020 and consists of more than 1800 members. This group is engaging constructively with HSE.

Conclusion
While it is very difficult to determine the magnitude or prevalence of the sequelae of Covid-19 in the longer term, it is clear that while there is a wide variability of type and severity of symptomatology, most studies show that fatigue, cough, headache, sleep disturbance and
joint/muscle pain are the most predominant symptoms. It may well be that there are two distinct clinical entities emerging:

1. Those with severe infection requiring hospitalisation who have require rehabilitation and have a prolonged recovery course, and
2. Those whose initial infection did not require hospitalisation but have prolonged debilitating symptoms.

What is becoming clearer is that underlying pre-morbid conditions do not appear to predict prolonged symptoms in any group and the only currently known predictor in the hospital group is invasive ventilation.

-Experience from other pandemics and from some cases of post-viral syndromes suggest potential for serious and negative impact on the mental health of those affected.

Case Study
JS, 47 Year old married mother of two children, HCW, very active, fit, high achiever, motivated, first ANP appointed in service. Phx: childhood asthma, Low von Willibrand Factor. Dx C19 +ve on 20/04/21, high temp, headache, otherwise no complications. Week 3 post dx: during exercise developed severe SOB, pains in limbs, lung pain, invx NAD. Since developed tachycardia (Rx: Betablockers); joint and muscle pain, fluctuating severe fatigue lasting days to weeks. Cognitive symptoms May-Sept 2020 including impaired concentration, intermittent disorientation, fleeting visual illusions. Now attending pulmonary rehab and not back at work.

Studies/Work Referenced
1. Post Covid Symptoms in Healthcare Workers in an Irish University Hospital (unpublished)

Thanks to:
Drs. Alex Reid and Anna-Rose Prior and colleagues, TUH.
Ms. JS, colleague, CHO 7 and TUH.
NCAGLs and teams.
Dr. Philip Crowley, ND QID.