

4 – Relevant findings from long-term follow-up of SARS and MERS patients

Severe acute respiratory syndrome (SARS) and Middle East respiratory syndrome (MERS) are similar diseases to COVID-19 and are caused by closely-related viruses. Literature reporting longer follow up exists and may offer an insight into the long-term sequelae for COVID-19.

A meta-analysis reviewing 28 SARS and MERS studies found that complications of these diseases, up to 6 months post-discharge were impaired diffusing capacity, 27%; reduced exercise capacity with mean 6-min walking distance was 461m; PTSD, 39%; depression, 33% (Ahmed et al., 2020). HRCT scans in 57 SARS survivors, 6-months after their admission to hospital demonstrated lung abnormalities in 75% of patients (Ng et al., 2004). These studies may imply potential pulmonary sequelae in affected COVID-19 patients lasting longer than the 3-month follow up seen to date.

Psychiatric disorders of anxiety, depression and post-traumatic stress disorder, commonly reported morbidities in SARS survivors (Moldofsky & Patcai, 2011) (Lam et al., 2009) (Chan et al., 2003) (Mak, Chu, Pan, Yiu, & Chan, 2009), seem to persist at follow up beyond 2 years. Chronic fatigue and weakness were other commonly persistent features (Mak et al., 2009)(Lam et al., 2009).

5 – Interventions to mitigate long-term sequelae

Very few studies assessed the effect of interventions on the burden of long-term symptoms, pathology or functional status in the convalescent phase of COVID-19 illness. One randomised trial (n=72) assessed pulmonary rehabilitation in older patients after COVID-19, demonstrating statistically significant beneficial effects on lung function measurements, 6-minute walk test and mental health (K. Liu et al., 2020). This successfully demonstrates the trial of an intervention based on best-available, albeit incomplete, characterisation of (respiratory) pathology in a group at higher risk of long-term COVID-19 sequelae, in this case older individuals. The conceptual approach demonstrated in **Figure 3** sets out a framework for prioritising research and clinical care driven by the necessity to identify early predictors of long-term sequelae following COVID-19 and act on those risk factors in the susceptible population, in acute disease and in the follow-up period.