will mean latecomers to treatment are not penalised with a refractory illness. As we have learnt over the past two decades, even punctual treatment when symptoms first arise continues to be too late when it comes to psychosis.

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What can psychiatrists learn from SARS and MERS outbreaks?

While standard care for patients with psychiatric disorders must continue during the current COVID-19 pandemic, psychiatrists also need to treat psychiatric complications of patients with this new disease. An estimation of expected prevalences of psychiatric disorders occurring in this group would help to redistribute mental health personnel between old and new tasks to serve the needs of both groups optimally. In *The Lancet Psychiatry*, Jonathan Rogers and colleagues[1] report the results of their systematic review and meta-analysis of psychiatric sequelae in patients admitted to hospital with severe acute respiratory syndrome (SARS), Middle East respiratory syndrome (MERS), and COVID-19 in the acute and post-illness stages of disease. The systematic review showed that most patients with SARS or MERS do not develop psychiatric disorders, but a significant minority exhibits confusion (36 [27·9%; 95% CI 20·5–36·0] of 129 patients), depressed mood (42 [32·6%; 24·7–40·9] of 129), anxiety (46 [35·7%; 27·6–44·2] of 129), impaired memory (44 [34·1%; 26·2–42·5] of 129), and insomnia (54 [41·9%; 22·5–50·5] of 129). The meta-analysis showed that the point prevalence in the post-illness stage was 32·2% (95% CI 23·7–42·0) for post-traumatic stress disorder, 14·9% (12·1–18·2) for depression, and 14·8% (11·1–19·4) for anxiety.

As the COVID-19 pandemic is so recent and ongoing, few studies reported on psychiatric disorders complicating this particular disease and those that did reported only short-term aspects. Rogers and colleagues circumvented this knowledge gap by taking together the few studies on psychiatric disorders in patients with COVID-19 with the much larger body of literature on psychiatric disorders accompanying two previous coronavirus epidemics: the 2002 SARS and the 2012 MERS outbreaks. From a biological perspective, it makes sense to merge data on SARS coronavirus 2 (SARS-CoV-2), which causes COVID-19, infections with those of SARS coronavirus (SARS-CoV) and MERS coronavirus (MERS-CoV) infections because resemblance between these three types of coronaviruses is high.[2] SARS-CoV-2 is structurally and genetically highly homologous to MERS-CoV (>50% similarity) and SARS-CoV (>79% similarity).[3] Even the spike proteins that SARS-CoV and SARS-CoV-2 use to attach to the target cell membrane (spike protein S, which interacts with the angiotensin-converting enzyme 2 receptor) are

largely similar.[4] Coronaviruses have been shown to be potentially neuroinvasive, neurotropic, and neurovirulent. For SARS-CoV and MERS-CoV, the presence of virus in the brain has been confirmed with RT-PCR, immunohistochemistry, and in-situ hybridisation.[3] Such confirmations have not yet been provided for SARS-CoV-2, but symptoms such as confusion, seizures, and anosmia during acute infection might reflect CNS involvement. Thus, in terms of virus properties, SARS-CoV-2, SARS-CoV, and MERS-CoV are largely comparable.[4]

However, treatment of patients admitted to the hospital for SARS-CoV-2 infection seems to be different from treatment of those admitted for SARS-CoV and MERS-CoV infections. Furthermore, the social situation to which COVID-19 survivors return is completely different from that of SARS and MERS survivors. These differences are relevant for the prevalence of psychiatric disorders in both acute and post-illness stages. Patients with COVID-19 who are admitted to hospital might be older than patients admitted for SARS[2,4] (although not all studies show this[5]), and the mean duration of their stay in the intensive care unit (ICU) is longer.[2,4] In the COVID-19 era, unlike the previous SARS and MERS outbreaks, fear for shortage of medical facilities such as ventilators can further increase stress. All three factors increase the risk for psychiatric complications such as anxiety and delirium in the acute stage for patients with COVID-19 compared with those with SARS or MERS. Staying at the ICU is a risk factor for developing psychiatric disorders by itself. In 2018, a large study among almost 5000 ICU survivors showed that prevalence of post-traumatic stress disorder was 46%, that of anxiety was 40%, and that of depression was 22%.[6] These prevalences are well above the upper ranges of the confidence intervals reported by Rogers and colleagues. As prolonged ICU stay and use of mechanical ventilation are both risk factors for psychiatric disorders,[7] patients with COVID-19 who need admission to an ICU are an ultra-high-risk group for developing acute psychiatric disorders, especially delirium.[8]

Finally, COVID-19 survivors, unlike SARS and MERS survivors, return to a society in deep economic crisis, with shortage of basic needs such as food in some countries and other countries still in lockdown and enforcing physical isolation. These social adversities will keep stress levels after somatic recovery high, and further increase patients' risk for long-term psychiatric complications such as anxiety and depression.

We conclude that findings from previous coronavirus outbreaks are useful,[4] but might not be exact predictors of prevalences of psychiatric complications for patients with COVID-19. The warning from Rogers and colleagues that we should prepare to treat large numbers of patients with COVID-19 who go on to develop delirium, post-traumatic stress disorder, anxiety, and depression is an important message for the psychiatric community. Reported prevalence estimates in this Article should be interpreted with caution, as true numbers of both acute and long-term psychiatric disorders for patients with COVID-19 might be considerably higher.

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