It is important to plumb the depths of pathways implicated in LAM pathogenesis to determine druggable targets. The data on the $LAM^{CORE}$ cell, its gene expression pattern, and its effect on its microenvironment were generated with the input of only three LAM lungs owing to the difficulty of obtaining fresh tissue samples. However, many of the pathways and processes proposed here fit with data already available about LAM pathogenesis. It is interesting to note that $LAM^{CORE}$ cells could not be detected in the lung from a patient who had been taking sirolimus, the only approved drug for LAM that was tested in a double-blind clinical trial (14), suggesting that the $LAM^{CORE}$ cell is sensitive to sirolimus and is indeed involved in disease pathogenesis. It would be interesting to see the expression pattern of the metastatic, circulating LAM cells and if they differ from the $LAM^{CORE}$ cell. And although the theorized uterine origin of the LAM cell is promising and deserves further investigation, it does not explain the rare occurrence of LAM in males (15). LAM cells in the lung may arise from another site, which would, of necessity, be the case in males. Nevertheless, this study has given the LAM scientific community opportunities for future studies and represents a major advance in our understanding of this disease. ■

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# Supporting a Precious Resource: Healthcare Clinicians

The well-being of frontline clinicians has received attention over the years (1). But the coronavirus disease (COVID-19) pandemic and its impact on clinicians smacked us all in the face with this reality—images of nurses with bruises on their faces from wearing personal protective equipment, stories of clinicians succumbing to suicide, and a seemingly never-ending surge of patients. Although evidence is building to show the impact of COVID-19 on clinicians, the essentialness of clinicians as one of the most, if not the greatest, precious resource in health care has never been clearer.

In this issue of the *Journal*, Azoulay and colleagues (pp. 1388–1398) examined symptoms of anxiety, depression, and peritraumatic dissociation in clinicians from 21 ICUs in France during spring 2020 (2). Nearly half of respondents reported anxiety, and a third reported depression and peritraumatic dissociation; these data are consistent with reports from other countries (3, 4). The sheer prevalence of anxiety, depression, and peritraumatic dissociation is staggering. The authors also identified six individual and organizational modifiable factors. Four factors associated with increased depression, anxiety, and disssociation were related to clinicians' emotions and circumstances. Fear was associated with increased odds of anxiety (odds ratio, 1.21; 95% confidence



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interval, 1.14–1.28), whereas struggling with difficult emotions (odds ratio, 1.16; 95% confidence interval, 1.06–1.27), inability to care for one's families (able to care: odds ratio, 0.35; 95% confidence interval, 0.22–0.53), and inability to rest (able to rest: odds ratio, 0.46; 95% confidence interval, 0.29–0.73) were all significantly associated with peritraumatic dissociation. A majority of the sample (84.8%) knew of colleagues infected with COVID-19, and a small but significant proportion knew of a colleague who died. Their family life was also affected. One-quarter of clinicians were completely unable to care for their families, and about half were only able to do so partially. Organizational and policy factors associated with depression were regrets over the restricted visitor policy (odds ratio, 1.49; 95% confidence interval, 1.09–2.04) and witnessing hasty end-of-life decisions (odds ratio, 1.69; 95% confidence interval, 1.29–2.27). These regrets and guilt overlapped with individual struggles with difficult emotions, but only 6.6% requested psychological support. Notably, women had higher odds of anxiety, depression, and dissociation (being male: odds ratio, 0.58; 95% confidence interval, 0.42–0.72), as did nurses and nursing assistants (odds ratio, 1.46; 95% confidence interval, 1.03–2.09) compared with men and other clinicians.

This paper had several strengths. The team should be commended for the timeliness and large sample. Over a thousand clinicians from multiple centers during the peak months of April and May 2020 captured the COVID-19 situation almost in real time in France ICUs. The survey response rate is remarkable considering no incentive payments were provided. This is one of the few studies to include *all personnel* in critical care and to measure peritraumatic dissociation in ICU clinicians using validated instruments. Many studies have documented the prevalence of post-traumatic stress disorder (PTSD), but measuring dissociation, during a particular trauma, has not been done. Peritraumatic dissociation, which describes the wide array of reaction to trauma such as depersonalization and emotional numbness, is a precursor to PTSD (5) and a more appropriate measure during the pandemic.

Despite the impressive work, their findings warrant further discussion. First, nurses and nursing assistants, predominantly female, had higher rates of psychological burden compared with other clinicians. In France, like the rest of the world, about 90% of nurses are women (6). Gender differences in psychological responses to occupational stress have been widely discussed (7). Even in the general public during COVID-19, women reported significantly higher rates of PTSD compared with men (8). Despite the narrowing of the gender gap in domestic responsibilities (9), more women are still shouldering family care responsiblities. Thus, gender is not a predisposed condition but rather may be a result of societal gender norms that lead women to have increased or competing demands at home and long working hours.

Though workload with COVID-19 was not associated with a higher rate of poor mental health, physical proximity to patients with COVID-19 was not measured. Nurses and nursing assistants spend more time in direct contact with patients. Ran and colleagues (10) found that longer hours in direct contact with patients with COVID-19 was linked to healthcare workers being infected and being fearful of becoming infected. Without exploring the proximity and duration of direct contact, it is difficult to determine if a particular profession is at a greater risk for poor mental health.

Emerging research suggests that anxiety can be spread by social contagion (11, 12). Increasing uncertainty related to COVID-19 has led to overall increases in anxiety. It is plausible that the high prevalence of anxiety in this study may be due to social contagion, that is, by an increase in anxiety among peers. Unfortunately, the current study design prevents further investigation, but future studies could examine this. Doing so would inform interventions to minimize poor mental health outcomes by leveraging peer support commonly found in groups of nurses and healthcare clinicians, especially in light of Azoulay and colleagues' results that collegial support was paramount. It is also important to note that 10% of clinicians reported euphoria, exaltation, hyperactivity, and high self-esteem. These symptoms may be an indicator of mood instability as described by Azoulay and colleagues, but they could also be coping mechanisms; ICU clinicians may be attempting to find joy at work and reframe their part in the pandemic to give them purpose (13).

Based on these findings and our prior work, support for clinicians must take a three-pronged approach at the national, organizational, and individual levels (14). At the national level, transparency of the situation, communication, and adequate personal protective equipment is a must. At the hospital level, policies for proper time off by conscious scheduling and additional work–life support for primary family caregivers are mandatory to avoid excessive overtime and limit hazardous work hours (15). Most importantly, because clinicians were negatively affected regardless of COVID-19 caseload, all hospitals and units should prioritize clinician well-being by promoting self-care but also by building policy and infrastructures to support clincians in balancing work and life.

In summary, this study highlights the vulnerability of clinicians during an unprecedented time. Every ICU personnel is at risk for psychological stress. As a society, and professional community, we must come together to preserve the well-being of our most precious human resource—healthcare clinicians. ■

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# Watchful Waiting in the ICU? Considerations for the Allocation of ICU Resources

The emergence of value-based health care—a reckoning of the benefits and costs of clinical and organizational interventions—has included an interest in the optimal use of critical care resources. Understanding the ideal allocation of costly and often limited resources, such as ICU beds, is essential to a hospital's daily operation and sustainability (1). When faced with uncertainty about the best triage decision for a sick patient, clinicians must ask: Does this patient benefit from ICU admission? They may also ask: What is my hospital's ICU bed availability at present? Conversely, toward the end of a patient's ICU course, clinicians must routinely consider: Is this recovering ICU patient ready for transfer to the medical ward (i.e., does this patient no longer benefit from the ICU)? They may also, and often do, ask: Is there another patient who needs this ICU bed more?

These latter questions, related to the timing of ICU discharge, are informed by *1*) a clinical assessment of "readiness for discharge" and *2*) the availability of ICU and ward beds at that time. High ward occupancy is a common source of healthcare capacity strain (2, 3). When present, this strain can delay both ICU discharge and, in turn, likely delay upstream new ICU admissions to those still-occupied beds. Thus, some typical ICU patients may instead be admitted to the ward or may "board" in the emergency department or in a specialty ICU that is not ideally matched with their needs. These scenarios may be associated with higher mortality relative to timely, appropriate ICU admission (4, 5).

In this issue of the *Journal*, Forster and colleagues (pp. 1399–1406) shed new light on the timing of ICU discharge as an explicit component of ICU resource allocation (6). The authors sought to understand the impact of an unintended delay in ICU discharge on patient outcomes. ICU discharge delay was defined as time between a patient being deemed "ready" for ICU discharge by the clinical team and actually leaving the ICU. Implicit in this definition is that the delay was driven by system-level factors, such as high ward occupancy or infection control needs, and not patient-level factors, and the patient remained ready and awaiting discharge during this delay. The authors performed a thoughtful retrospective cohort study using the Australian and New Zealand Intensive Care Society Adult Patient Database. They studied over 1 million patients from 190 ICUs who were discharged alive from the ICU to the ward after their first ICU admission. The authors developed a hierarchical model to estimate the association between discharge delay and mortality or ICU readmission. In sensitivity analyses, the investigators examined outcomes among three prespecified subgroups stratified by predicted risk of death upon ICU admission.

Forster and colleagues report that 75% of patients were discharged within 6 hours of being deemed ready, 13% were discharged after a 6- to 12-hour delay, and 2% were delayed 48–72 hours. Relative to discharge within 6 hours, risk-adjusted mortality was lower, with a discharge delay of 24–48 hours (adjusted odds ratio, 0.94; 95% confidence interval, 0.90–0.99), and reached its lowest estimated value at 48–72 hours of delay (adjusted odds ratio, 0.87; 95% confidence interval, 0.79–0.94). However, mortality was not significantly lower than the reference group when discharge



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