

WORD LIMIT 1800

Post-Intensive Care Syndrome: Recognizing the Critical Need for Psychiatric Care

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Case Example:

Paul, a 68-year-old widowed man, was found lying on the floor of his home. When the emergency medical service came, he was found to have significant trouble breathing, and not oriented to place or time. He was brought to the emergency room and found to have sepsis secondary to pneumonia. He was promptly intubated and placed on mechanical ventilation in the ER because of worsening respiratory distress.

Paul was hospitalized in the intensive care unit (ICU) and was treated with intravenous fluids, vasopressors and antibiotics for overwhelming infection and septic shock. After one week, he was extubated and transferred to the regular floor. For the first few days on the regular floor, he remained confused and only sometimes recognized his surroundings. Eventually, he improved physically and was fully oriented to person, place and time upon discharge.

Two months later, Paul's neighbor brought him to his primary care doctor for a follow-up appointment. The neighbor was quite concerned that Paul was now having some difficulties with paying his bills correctly and keeping track of his new medication regimen. Paul was still able to drive a few blocks to the grocery store, but became tired if he drove more than 30 minutes. He was also less willing to drive to unfamiliar places since he had difficulty following the GPS. The neighbor also noted that Paul was repeating himself more frequently and would misplace items. He now used lists to remind himself of daily activities. Paul used to enjoy repairing cars and building model airplanes in his free time, but now he needed someone to help him pick out the correct parts when fixing cars, and he struggled with the difficult steps of model building. Paul seemed withdrawn and depressed.

Post-intensive care syndrome (PICS): A Rapidly Growing Phenomenon in Older Adults

As survival rates from ICU hospitalizations have increased over the past few decades, the long-term cognitive, psychological, and physical impairments from their critical illness have now become the "defining challenge of critical care medicine."^{1,2} These long-term impairments are known as post-intensive care syndrome (PICS).¹⁻³ More than half of all ICU survivors suffer from at least one PICS-related impairment, and these effects can persist as long as five or more

years after discharge.² PICS has become an increasingly important phenomenon in older adults for several reasons.^{1,4-7} First, the number of older adults with critical illness is rapidly increasing as the population ages. Older patients account for about 50% of ICU admissions.⁴⁻⁷ Second, more than 70% of older adults hospitalized in the ICU develop delirium,⁸ which is a major risk factor for developing ICU-acquired cognitive impairments.^{8,9} Third, cognitive and functional impairment before an ICU hospitalization increases the likelihood of developing cognitive and functional decline afterwards.¹⁰⁻¹²

Cognitive Symptoms

ICU-acquired long-term cognitive impairment (LTCI) affects 30-80% of survivors. LTCI appears to affect multiple cognitive domains, including executive functioning, memory, and attention, rather than primarily memory. Many patients' LTCI improve within the first year, although they can persist for many years in some individuals. Risk factors for LTCI in older adults include neurologic dysfunction, infection or severe sepsis, and acute dialysis.¹³ Duration of delirium is a risk factor for LTCI for adults of any age.^{12,14} Current theories suggest that LTCI from delirium may be distinct from Alzheimer's disease (AD). While beta amyloid deposition appears to be a key factor in the development of AD, long-term cognitive impairment from delirium appears to be caused by hypoxia and pro-inflammatory cytokines.¹⁵ This theory is consistent with the observation that the onset of LTCI from delirium appears to depend on the duration of exposure to the pathophysiologic processes of delirium.

Additional evidence also suggests that LTCI from delirium appears to differ from AD in several important ways. First, many patients' LTCI improves after their acute hospitalization. This trajectory is quite different from the progressive nature of AD. Second, executive functioning in LTCI is associated with more severe depression and subsequently worse mental health quality of life.¹⁶ Finally, LTCI may be associated with white matter damage and smaller superior frontal lobes, thalamus, and cerebellar volumes, whereas AD is classically associated with predominant hippocampal atrophy.^{17,18} Interestingly, however, smaller hippocampal volumes are also associated with longer duration of delirium.¹⁸

Mental Health Symptoms

Depression, anxiety and post-traumatic stress disorder are the best characterized mental health impairments in PICS. Among adult ICU survivors, prevalence is 19-37% for depression,^{19, 20, 21} 32-40% for anxiety,^{22,23} and 19-22% for PTSD.^{19,24} Psychiatric comorbidity (the presence of multiple psychiatric disorders) in ICU survivors is 4-6 times more common compared to the general population (25-33% of ICU survivors versus 6% for the general population).²⁵⁻²⁸ The duration of mental health symptoms after ICU hospitalization is not well studied. To further complicate matters, studies suggest that patients who develop critical illness may be more likely to have premorbid psychiatric illness compared to those hospitalized in general wards and the general population.²⁹

Case continued.

Paul was referred to an interdisciplinary ICU survivor clinic for further workup and management. He completed the Repeatable Battery for the Assessment of Neuropsychological Status Update (RBANS), a 30-minute cognitive screen. His test results showed that he had mild cognitive impairment, multidomain amnestic type, and comorbid moderate depression. The consulting psychiatrist recommended starting venlafaxine to help with his depression and neuropathic pain. He was also referred for additional outpatient physical therapy and to a psychologist for cognitive behavioral therapy for his depression.

Treatment Strategies

There are no completed, multisite randomized, double-blinded placebo controlled studies showing the efficacy of medications to ameliorate long-term cognitive impairment or mental health symptoms of PICS. Physical and occupational therapy should be utilized more frequently to ameliorate functional difficulties. Home health services can be invaluable to support that the patient can remain in the home setting independently while reducing caregiver burden. Studies are currently underway to test the efficacy of treatments for PICS. The mobile Critical Care Recovery Program is an ongoing clinical trial studying the efficacy of a home-based multidisciplinary intervention for PICS. The IMPROVE trial is an ongoing clinical trial to test whether combined physical and cognitive training can improve outcomes of long-term cognitive impairment.

One major area of intervention psychiatrists can help is by reducing polypharmacy, which is often the result of added medications during the hospitalizations. ICU patients are often discharged on inappropriate medications, and they continue to take these medications for a significant duration post-discharge. These medications include anticholinergics, opioids, nonbenzodiazepine hypnotics and benzodiazepines, and atypical antipsychotics.³⁰ Despite the recommendation to minimize use of antipsychotics, almost a quarter of patients who were given a new antipsychotic during their hospitalization were discharged on an antipsychotic. If clinicians decide to continue psychotropics upon discharge from the ICU, they should carefully weigh the benefits versus risks, such as the FDA black box warning for antipsychotics.

Evidence for the efficacy of mental treatments specific for ICU survivors is limited. It makes sense, however, to deliver evidence-based mental health treatment and for primary care physicians to screen depression and anxiety using self-report questionnaires such as the Patient Health Questionnaire-9 (PHQ-9) for depression and Generalized Anxiety Disorder-7 (GAD-7) for anxiety. ICU survivors with depression and anxiety should be aggressively treated with antidepressants and depression-focused psychotherapies. Those who have a history of treatment with mental health specialists, have been hospitalized on psychiatry or received ECT, or are not responding to first line treatments should be referred for subspecialty mental health treatment.

Another important intervention is the dedicated post-ICU survivor clinics. In 2016, the Society of Critical Care Medicine (SCCM) sponsored the creation of a national collaborative network of ICU survivor clinics, known as the Thrive Post ICU Clinic Peer Collaborative. A small longitudinal study of the Critical Care Recovery Center in Indianapolis found beneficial effects on patients' cognitive and functional symptoms.³¹ Future studies will need to further examine the effectiveness of ICU survivor clinic across the United States.

Special Challenges with Older Adults

There are a number of special challenges with older adults. Although age is not a risk factor for the development of long-term cognitive impairment, older adults are more likely to develop delirium compared to their younger counterparts.^{32, 33} Older adults are also more likely to develop functional difficulties post-ICU, since they have functional disability more frequently prior to their ICU hospitalization¹⁹ Studies have found mixed results on whether age increases the risk for mental health symptoms. Nevertheless, older adults frequently encounter additional barriers as they seek mental health treatment. For example, older adults who need psychotropic management may experience adverse effects of medications more easily than their younger counterparts, and may have to overcome more physical challenges to come to psychotherapy sessions.

Special Challenges with Family

Post-intensive care syndrome-family (PICS-F) describes the psychological impact of ICU hospitalization and post-ICU recovery on family members and other caregivers. PICS-F symptoms can start in the ICU and often persist in the post-ICU phase. Interventions for PICS-F include keeping diaries and using educational materials.³⁴ Diaries are written by the ICU staff and family, and include photos of patients and family members during the ICU stay. Educational materials include pamphlets or brochures about PICS and informational videos available on the hospital TV and social media.

Future directions

The rapid growth of older ICU survivors presents the field of medicine and surgery with an unprecedented clinical challenge to care for this population. Psychiatric morbidity in ICU survivors is associated with adverse effects on patients' quality of life and increased acute care service utilization after discharge from the ICU.^{27,35} However, the role of mental health professionals in these ICU survivorship models has not been well-defined. Psychiatrists can play a key role in building and leading new health delivery models for PICS. First, clinical practice guidelines for the neuropsychiatric sequelae in ICU survivors do not exist. Psychiatrists need to provide invaluable input on the diagnosis and management of post-ICU cognitive and mental health impairments. Next, psychiatrists need to collaborate with the leadership in the hospital to build system-wide interventions for ICU survivors. These interventions should focus on a proactive assessment of psychiatric comorbidity for both patients and caregivers upon admission. In addition, these interventions should create a plan for ongoing management throughout patients' entire hospitalization and in the outpatient setting. There should be a recovery care coordinator who is identified during the ICU hospitalization. This will ensure that care coordination starts with patients and caregivers during the ICU hospitalization. The recovery care coordinator can then collaborate with the psychiatrist to implement the individual care plans and ensure continuity of care in the various outpatient settings. Most importantly, the recovery care coordinator continues to work with the patient and family in the outpatient setting until the care plan goals are achieved.

All psychiatrists, including geriatric psychiatrists, can also be part of interdisciplinary teams by providing clinical services and leading clinical practice and research innovations. They can provide diagnostic and treatment recommendations via traditional face-to-face visits, electronic/telephone consultation, or videoconferencing. Psychiatrists can also increase their impact by educating trainees in the fields of mental health and medical and surgical subspecialties. Proactive collaboration between psychiatry in medical and surgical fields will raise awareness of cognitive and mental health impairments in this population and decrease the stigma of mental health treatment.

In summary, critical care medicine is facing an unprecedented state of providing services for chronically ill patients, particularly older adults, who have survived their ICU hospitalization. More than ever before, we need to raise awareness of PICS among psychiatrists as well as among medical and surgical subspecialties providers.

KEY POINTS

- The number of older ICU survivors is growing because of the aging population and the improvement of ICU survival rates
- Post-intensive care syndrome (PICS) is defined as the long-term cognitive, psychological, and physical sequelae
- Many family members of patients hospitalized in the ICU experience mental health symptoms—a phenomena known as PICS-family (PICS-F)

-Psychiatrists, particularly geriatric psychiatrists, may be able to play a role in collaborative care clinics designed to care for ICU survivors

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	Interventions during ICU stay	References
Patients	Prevent delirium as delirium is a risk factor for long-term cognitive impairment for adults of any age	12, 14, 36
	Use music therapy and relaxation techniques for pain management	36
	Encourage early mobilization for functional improvement, shorter duration of mechanical ventilation, shorter length of stay, and decreased cost of stay	37
	Use nonopioid analgesics to decrease the amount of opioid administered in the ICU	36
	Antipsychotics and acetylcholinesterase inhibitors have not been shown to prevent or treat delirium	36, 38
	Use the Confusion Assessment Method (CAM) for the ICU and the Intensive Care Delirium Screening Checklist to reliably monitor delirium in adult ICU patients	43
	Control light and noise, cluster patient care activities, and decrease stimuli at night in the ICU	36
	Limit use of benzodiazepine for alcohol withdrawal treatment: Systematic literature review shows that the use of benzodiazepines and duration of sedation are significant clinical risk factors for the development of post-ICU PTSD	24, 39
	Limit antipsychotic use for behavioral disturbances: Antipsychotic use has not yet been consistently shown to improve duration or severity of delirium, hospital length of stay, or mortality	38
	Minimize use of benzodiazepine	36
Caregivers	Monitor PICS-F symptoms as they can start in the ICU and often persist in the post ICU phase	45
	Provide family-centered care by allowing family members to be present for goal-setting conversations and improve communication and family knowledge	44
	Provide support groups	45
	The family should receive updates frequently and consistently in a language they understand	46
	Use diaries written by the ICU staff and family	34, 44, 47
	Provide educational materials including pamphlets or brochures about PICS and informational videos available on the hospital television and social media	34
	Avoid writing condolence letters to family members as these can worsen their depression and PTSD-related symptoms	40
	Provide referral to family counseling and mental health services	46

	Interventions after hospital discharge	References
Patients	Avoid inappropriate medications at discharge, including anticholinergics, opioids, nonbenzodiazepine hypnotics and benzodiazepines, and atypical antipsychotics	30
	Weigh the benefits versus risk when deciding to continue psychotropics, such as the U.S. Food and Drug Administration black box warning for antipsychotics (2015 Updated Beers Criteria)	48
	After discharge, cognitive, behavioral, and physical functioning should be assessed using standardized measures	31
	Provide ongoing collaboration with primary care services as needed	41
	Describe protocols including identification of target medications and timeline for stopping medications	41
	Provide appropriate psychiatric consultation for recommendations for psychotropic management and psychotherapy	42
Caregivers	Monitor for symptoms of PICS-F and provide referrals for treatment as needed	45
	Provide family members with the signs and symptoms of PICS	44