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The Intoxicated ICU Patient: Another Opportunity to Improve Long-Term Outcomes

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For more than a decade, the horizon of critical care research has extended beyond the walls of the intensive care unit (ICU) to understand and improve the long-term outcomes of ICU survivors (1). However, despite accounting for up to 14% of ICU admissions (2), little is known about the long-term outcomes of patients admitted with an acute intoxication. Without research quantifying long term outcomes, there is little to drive improvements in clinical practice or standards against which to measure the success of future interventions.

In a large epidemiologic study of over 7000 patients admitted to 81 ICUs in the Netherlands for an acute intoxication, Brandenburg and colleagues describe the proportion of patients who died up to two years after admission (3). At first glance, these patients seem to fare well. Similar to prior studies, the ICU mortality was 1.2% and in-hospital mortality rate was 2.1% (4, 5). These low mortality rates are not surprising. The young age (mean age 42 years) and lack of medical comorbidities of intoxicated patients suggest that most patients are able to survive a significant acute physiological insult and emerge seemingly unscathed. However, this young and otherwise healthy group of patients had a substantial risk for death following hospital discharge, with 9.2% of the overall population dying by 24 months. Patients admitted for “street drug” intoxications had an even higher proportion dying by two years (12.3%). These findings are consistent with the prior observation that mortality rates for intoxicated patients 5 years following hospital discharge are more than 6 times that of the general population (6).

While the findings by Brandenburg and colleagues provide a firm foundation to understand the long-term outcomes of acutely intoxicated patients, several research gaps remain to help

guide clinical care. First, greater uniformity in how substances leading to acute intoxication are classified would help researchers and clinicians interpret epidemiologic findings in light of regional drug use patterns. For instance, it is not clear if pharmaceutical opioids were classified as street drugs, analgesics, or another toxin in the schema outlined by the APACHE IV subgroups.

Second, for specific substances, it would be helpful to understand the timing of death relative to hospital discharge. For pharmaceutical opioids and heroin, the risk of overdose may be particularly high if an enforced period of abstinence, such as hospitalization (7), leads to loss of tolerance with subsequent resumption of use. A similar phenomenon has been described in people recently released from prison. In the first weeks following release from prison, the risk of death from drug overdose is more than 100 times that of the general population (8, 9).

Third, there is little available information about the long-term morbidity experienced by this population. In a similarly young cohort without medical comorbidities, 4% of patients admitted to the ICU with alcohol withdrawal died within a year of hospital discharge while 40% were rehospitalized (10). Defining rates of rehospitalization for intoxicated patients may provide an opportunity to engage hospital systems and garner resources to improve outcomes. Engaging hospital systems to invest in improving long-term outcomes is particularly important in countries where patients have limited access to long-term mental health care and treatment.

Fourth, understanding the modifiable predictors of long-term outcomes for intoxicated patients admitted to the ICU could suggest how to focus care following hospital discharge. Suicide attempts and drug use are responsible for over 90% of ICU admissions for intoxication (11). Therefore, substance use disorders, other psychiatric diagnoses (such as depression, anxiety, and bipolar disorder), or both are likely to be the underlying cause of intoxication. Prior studies demonstrate that ICU survivors with a dual diagnosis – an alcohol or substance use disorder plus another psychiatric diagnosis – are at the highest risk of recurrent morbidity and mortality following hospital discharge (10). Understanding whether these findings extend to patients admitted to the ICU with an acute intoxication may help identify those patients at highest risk of poor outcomes and, thus, focus resources following hospital discharge.

Finally, more research is needed to determine how the multidisciplinary ICU team can best engage and support patients who survive an ICU admission for intoxication. Historically, critical care providers may have seen their clinical roles as limited to stabilizing the patient, administering an antidote, and providing supportive care (12). However, the findings by Brandenburg and colleagues suggest that an ICU admission is a sentinel event. An efficient and effective system is needed to seize the brief moment of opportunity afforded by an ICU admission. In order to construct such a system, future work may focus on understanding patients' needs, what outcomes are important to them, barriers to engaging in longitudinal health care, and patients' motivation to improve the outcomes that are important to them. Driven by a more detailed understanding of these issues, an effective system would then be able to tailor and execute a plan for each individual. For instance, providing overdose

education and naloxone for take-home use may help reduce the risk of future ICU admissions for patients with an opioid use disorder while engaging them in meaningful conversations about their risk.

Caerus, the Greek god of opportunity, was often pictured holding a razor to highlight the razor thin nature of the moments in which opportunity approaches and passes. Acutely intoxicated patients enter the ICU in a moment of crisis. Fortunately, for the vast majority of these patients, this crisis will pass. More focused attention on what happens beyond the walls of the ICU could allow critical care providers to partner with patients and outpatient providers to seize the opportunity provided by ICU admission to improve long-term outcomes.

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