The Impact of Events Scale-Revised as a measure of posttraumatic stress disorder in acute lung injury survivors

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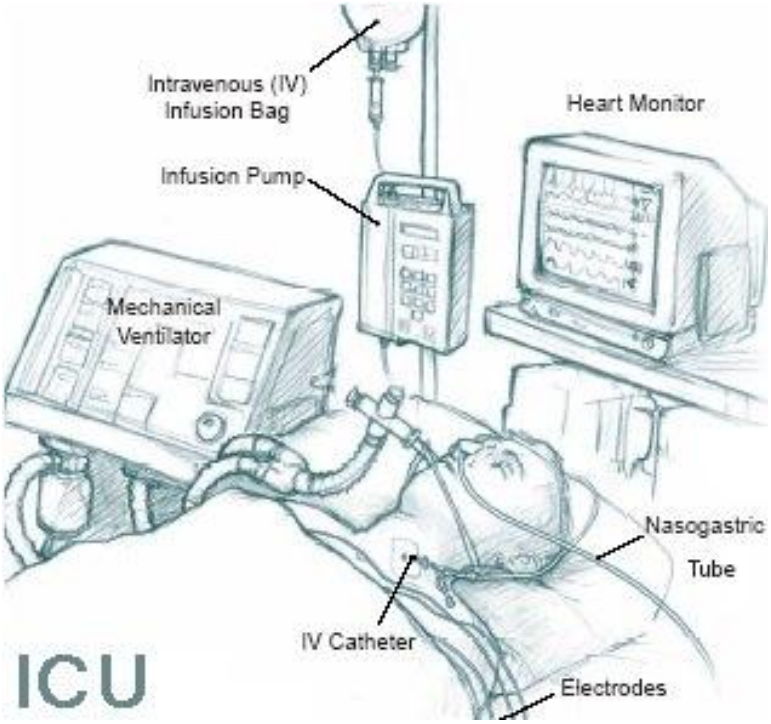
Case Example

Last year I was hospitalized for two weeks, one in an ICU with life-threatening pneumonia (with sepsis/?ALI). It was the most terrorizing, frightening experience I could possibly imagine. I was convinced I had been abducted, raped and placed in some sort of diabolical experimental testing facility. Even after being moved out of ICU I remained in constant fear and quite delusional at times. I had a head CT because of what the nurse labeled as "strange" behavior. After two weeks I returned home, scared of things I couldn't even name. My husband took excellent care of me but had difficulty understanding what I was trying to convey about my experience, and no one at the hospital seemed able to explain what had happened. Last month I started to have horrible flashbacks about the ICU episode. The article helped me to understand what happened and what may still be happening to me as a result of my (critical illness and) week in the ICU. It is a great relief to know that I am not alone, and not at fault…

Critical illnesses and requisite ICU treatments are stressful

- respiratory insufficiency (shortness of breath)
- pain with endotracheal intubation and suctioning
- systemic inflammation, with BBB breakdown in sepsis
- activation of the hypothalamic-pituitary-adrenal axis
  - decreased adrenocortical responsiveness due to inflammatory mediators
- exogenous catecholamine administration to maintain adequate blood pressure
- delirium caused by illness, medications (e.g., sedatives), immobility, lack of normal sleep
  - hallucinations and delusions
- loss of ability to communicate normally
- loss of autonomy



Psychiatric Morbidity in Survivors of the Acute Respiratory Distress Syndrome: A Systematic Review

Dimitry S. Davydow, MD, Sanjay V. Desai, MD, Dale M. Needham, MD, PhD, and O. Joseph Bienvenu, MD, PhD

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Point prevalence…

- …using questionnaires with cut-offs for "clinically significant" PTSD symptoms: 21-35% (median 28%) over the first five years post-ALI
  - little evidence for fewer symptoms if assessed later post-ALI
- …using psychiatrist diagnoses of PTSD: 44% at hospital discharge, 25% at 5 years, and 24% at 8 years

In-ICU "risk factors"

- longer duration of sedation associated with more PTSD symptoms
- memories of adverse ICU experiences ("nightmares," anxiety, pain, and respiratory distress) were associated with PTSD symptoms
- *delirium?*

Posttraumatic stress disorder in general intensive care unit survivors: a systematic review☆

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Point prevalence…

- …using questionnaires with cut-offs for "clinically significant" PTSD symptoms: 8-57% (median 22%) over the first year post-ICU.
  - in 4 studies that assessed the same patients longitudinally over 6 months to a year, there was no evidence of decreases in symptoms over time.
- …using clinician diagnoses of PTSD: 10-40% (median 19%)

Pre-ICU risk factor

- pre-ICU anxiety and/or depressive illness

in-ICU "risk factors"

- agitation and physical restraint
- amount of bzd & opioid sedation

post-ICU "risk factor"

- memories of frightening experiences in the ICU
  - (paranoid delusions, hallucinations, nightmare-like experiences)

in-ICU protective factor

- systemic corticosteroid administration
  - stress doses in septic shock patients

Questions to address and their clinical relevance

- To what extent is in-ICU amount/duration of benzodiazepine/opioid sedation a *marker* of pre-ICU risk for post-ICU PTSD symptoms, vs. a cause?
  - if benzodiazepine sedation is truly causally related to, post-ICU PTSD symptoms, then lower doses or use of non-GABA-ergic sedatives may truly be preventative
- What other preventive interventions and treatments may be useful?
  - ICU diaries, in-ICU social support, and in-ICU cognitive-behavioral therapy (CBT) appear beneficial
  - Early post-ICU cognitive behavioral therapy (e.g., exposure)?
  - “Antidepressants” (e.g., SSRIs) if PTSD symptoms persist?
- Does administration of corticosteroids prevent post-ICU PTSD?
  - could affect the risk/benefit analysis clinicians make when deciding whether or not to administer these medicines
- Is administration of catecholamines causally related to PTSD?
  - relevant to the neurobiology of PTSD generally
- Are there valid questionnaire measures of PTSD besides the PTSS-10 and PTSS-14?
  - neither provides broad coverage of PTSD criteria

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Background: Though questionnaires are frequently employed in intensive care unit (ICU) follow-up studies to measure posttraumatic stress disorder (PTSD) symptoms, most have not been validated against a clinical interview standard in this population. In the current study, we evaluated the Impact of Events Scale-Revised (IES-R) as a measure of PTSD symptoms in ICU survivors.

Methods: Patients were consecutively recruited from 2 prospective cohort studies evaluating acute lung injury (ALI) survivor outcomes. At 12- to 60-month follow-up post-ALI, 60 patients completed the IES-R, and, within one week, were interviewed using a semistructured diagnostic interview, the Clinician-Administered PTSD Scale (CAPS). The IES-R is a reliable 22-item self-report questionnaire developed to examine the psychological impact of a specific trauma (in this case, critical illness and intensive care treatment). The CAPS is the current "gold" standard in PTSD clinical research; it allows for a quantitative assessment of PTSD symptoms, as well as a qualitative diagnosis (present/absent).

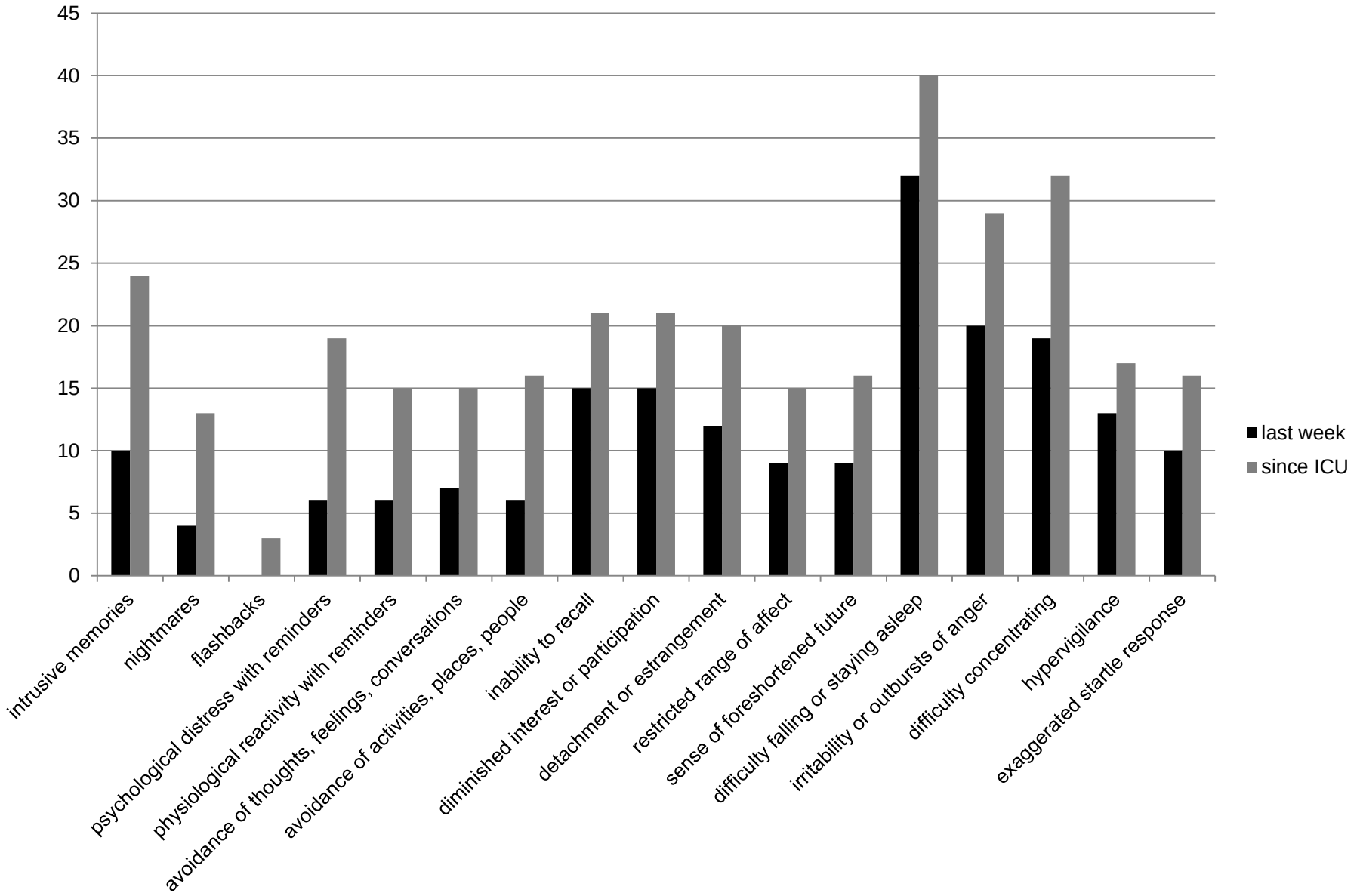

Figure 1. Frequency of individual Clinician-Administered PTSD Scale symptoms in the last week and since the intensive care unit (n=60).

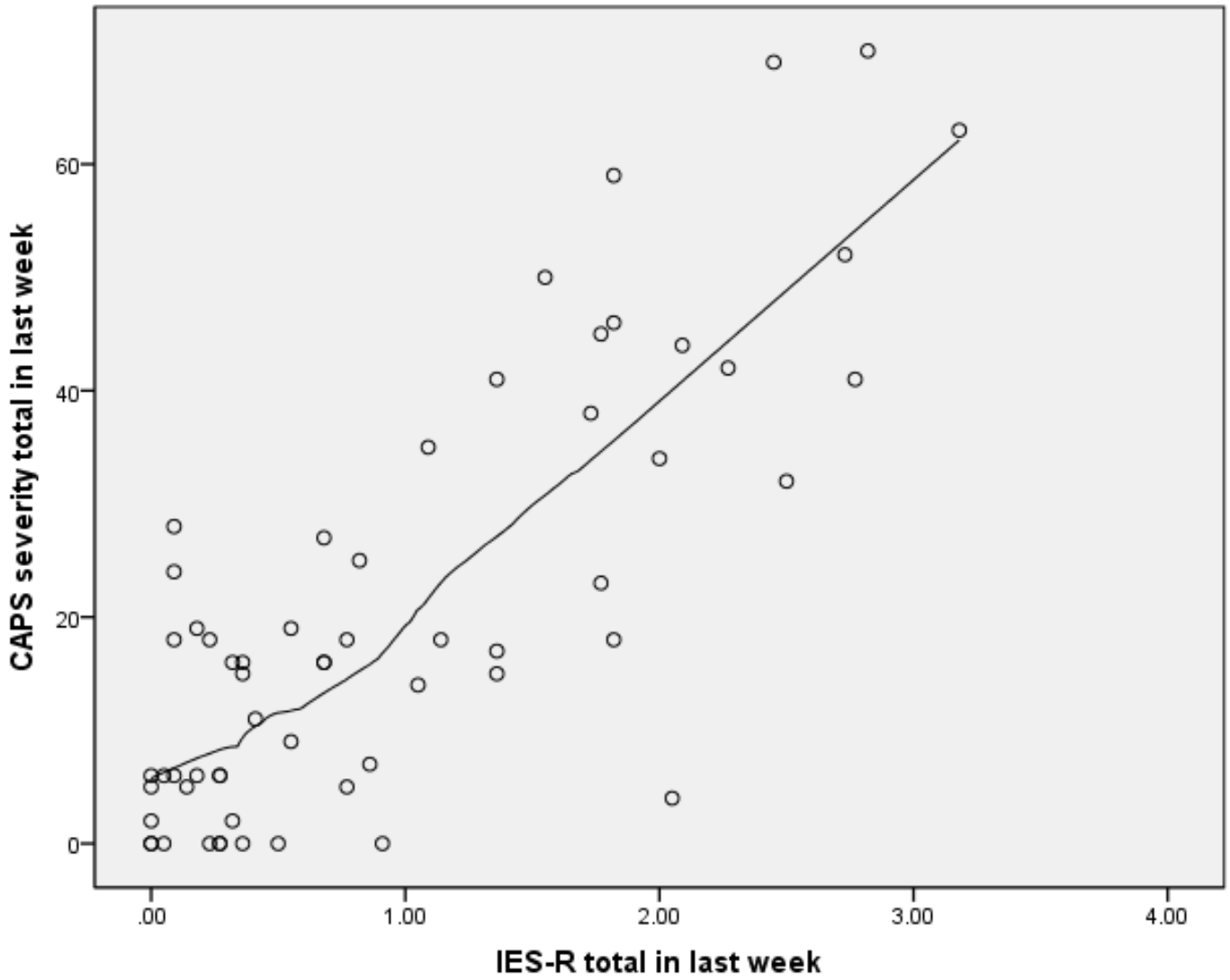

Figure 2. Convergence of two measures of posttraumatic stress disorder (PTSD) symptoms in the last week: the Impact of Events Scale-Revised (IES-R) total score *versus* Clinician-Administered PTSD Scale (CAPS) total severity score. Pearson's r=0.80 ($p<0.0005$); Spearman's rho=0.69 ($p<0.0005$).

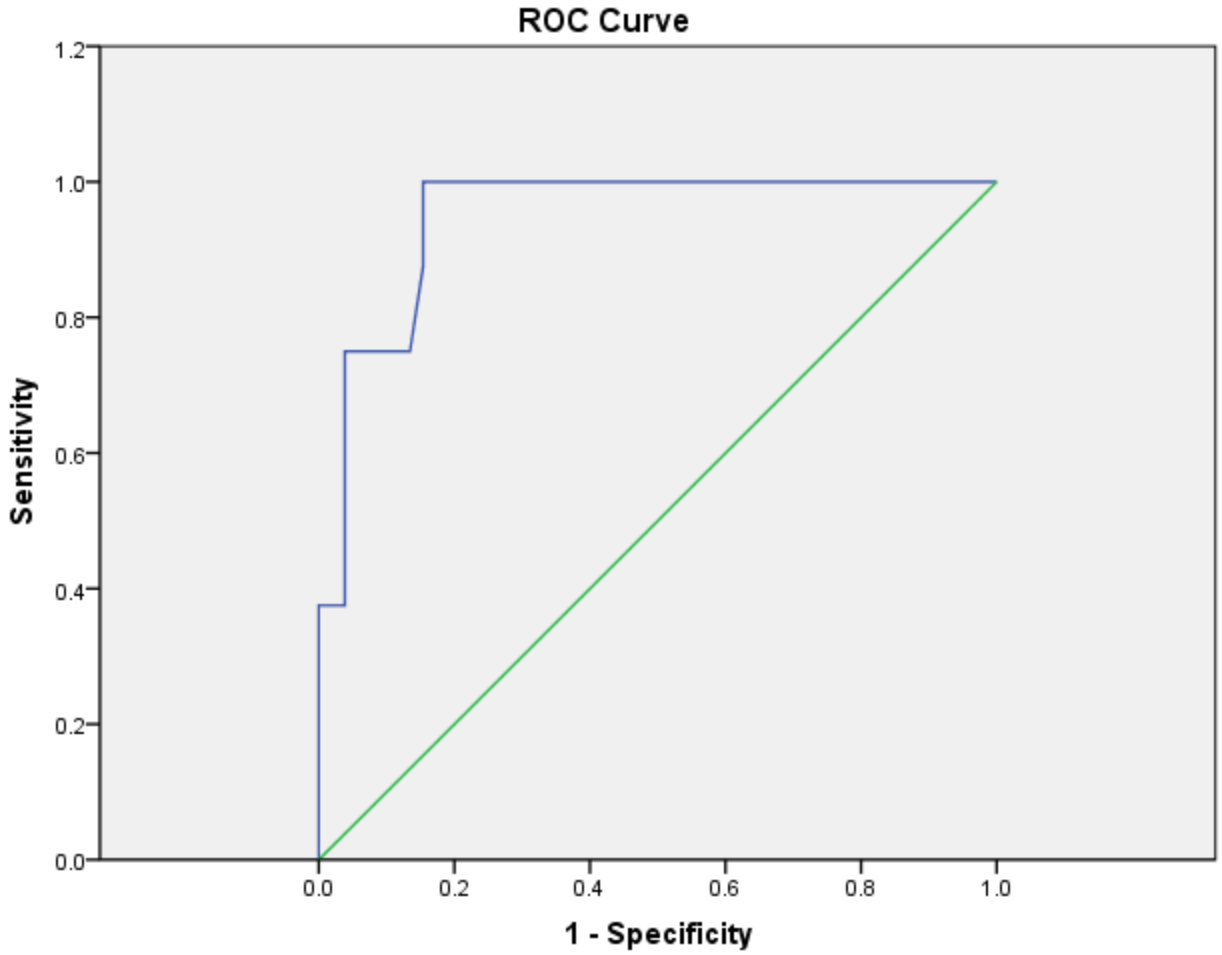

Figure 3. Convergence of two measures of posttraumatic stress disorder (PTSD) in the last week: Receiver Operating Characteristic (ROC) Curve for the Impact Events Scale-Revised total score (test variable) *versus* the Clinician-Administered PTSD Scale PTSD (n=8/60 – criterion variable). The area under the curve (AUC) = 95% (95% confidence interval, 88-100%).

Results: Eight of the 60 patients (13%) had current CAPS PTSD, while and an additional 8 patients had partial PTSD (total=27%). In a receiver operating characteristic curve analysis with last-week CAPS PTSD or partial PTSD as criterion variables, the area under the curve ranged from 95% (95% confidence interval, 88-100%) to 97% (95% CI, 92-100%). At an IES-R threshold of 1.6, with the same criterion variables, sensitivities ranged from 80-100%, specificities 85-91%, positive predictive values 50-75%, negative predictive values 93-100%, positive likelihood ratios 6.5-9.0, negative likelihood ratios 0.0-0.2, and efficiencies 87-90%.

Conclusion: The correlation between the IES-R total score and the CAPS total severity score was high, in the range expected for measures of the same mental health construct. The IES-R appears to be an excellent brief PTSD symptom measure and screening tool in ICU survivors.

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