

Patient and Population-Level Approaches to Persistent Critical Illness and Prolonged Intensive Care Unit Stays



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KEYWORDS

- Prolonged length of stay • Prolonged mechanical ventilation • Chronic critical illness
- Persistent critical illness • ICU

KEY POINTS

- The differential diagnosis of prolonged intensive care unit (ICU) stays includes intrinsic patient and admitting diagnostic characteristics, things that happen during the course of critical illness, and, system failures.
- Existing data suggest that dynamic development of cascading new problems (so-called persistent critical illness) is a major driver at the population level.
- Many patients with prolonged ICU stays do not have persistent respiratory failure; prolonged mechanical ventilation is only a subset of chronic critical illness.

Consider taking over a clinical service in an intensive care unit (ICU). As you receive handoff of the patients, you are told it is ICU day 11 for the patient in bed 06. What differential diagnosis will allow you to appropriately move forward with this patient?

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The authors suggest the approach provided in **Fig. 1** as an option for determining the differential diagnosis. Broadly, this differential diagnosis can be organized into 3 categories:

- Intrinsic patient and admitting diagnostic characteristics
- Things that happen during the course of critical illness
- System failures.

This article develops an approach to patients with prolonged ICU stays. First, it briefly sketches the system issues that make these rare patients with ICU stays of

Differential Diagnosis	Testable Implications in Existing Data
Intrinsic Patient Characteristics	
Diseases with long intrinsic recovery time <ul style="list-style-type: none"> • Neurologic • Pulmonary • Inflammatory • Complex nursing needs 	Long-stayers concentrated in a few discrete diagnoses
Frailty	Very high mortality, older age, more comorbidity predictive of persistent critical illness
Acute unrecoverable illness	Very high mortality
Things that happen in the ICU	
<i>Acquired single-organ problems</i>	
Failure to wean from ventilator / Muscle & diaphragmatic weakness / Prolonged mechanical ventilation	Long stayers mostly ventilated, predominantly hypercarbic respiratory failure
Van den Beghe Endocrinopathy	Unclear population-level implications
Malnutrition / Protein Wasting	Unclear population-level implications
Immune-paralysis	Predominance of sepsis among later organ failures
<i>Dynamic cascades in multiple organs</i>	
Cascading critical illness	Increasing irrelevance of admitting diagnosis to prognosis with longer time in ICU
Cascade iatrogenesis	Increasing irrelevance of admitting diagnosis to prognosis, <i>plus</i> measureable errors
System Failures	
Bedblock	Little difference in mortality
Admitting patients with unrealistic expectations or lack of palliative care involvement	Very high mortality
Idiosyncratic requirements for ICU care for certain types of care	Little difference in mortality

Fig. 1. Differential diagnosis of patients with prolonged ICU stays.

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