

Early identification of respiratory decompensation among older adults with rib fractures: a sound solution for fragile ribs

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Failure to rescue in the setting of respiratory decline contributes significantly to unplanned intensive care unit admissions (UIAs). In this context, Davis *et al*¹ evaluate a novel continuous monitor of pulmonary function (Integrated Pulmonary Index, IPI) to identify early signs of respiratory decompensation among older adults with rib fractures. In this thought-provoking study, the authors found that UIAs were significantly lower among patients monitored with IPI. In our opinion, a critical examination of this study is warranted to contextualize their findings and help guide future research on this important topic. Here we highlight a few areas of importance.

Predicting which patients are likely to clinically deteriorate is important for mitigating poor outcomes. Whereas the IPI was intended to identify early signs of respiratory decompensation, it is unclear which patients are most likely to benefit from this tool. The retrospectively selected control group appears to have a very different baseline risk profile than the intervention cohort, which was older and had higher rates of smoking, heart failure or stroke. It is unclear if the authors controlled for these differences in their analysis. Moreover, providers were not required to implement IPI monitoring on all eligible patients, perhaps introducing selection bias into their sample population.

In addition, UIAs increase overall length of stay and resource utilization and are an important quality metric in trauma care. Patients with rib fractures are especially vulnerable to unanticipated transfer, partially due to difficulty in initial triaging. However, the IPI tool was not intended to help risk stratify patients or guide initial triage disposition. Several risk-based triage tools have been studied in this capacity (ie, Rib Injury Guidelines Score, PIC Score, Forced Vital Capacity), and as such, may be better suited for informing admission triage and to downgrade decisions.^{2–4} Although the IPI tool appears to be a useful adjunct for alerting providers

when a patient unexpectedly deviates from the predicted clinical trajectory, it seems that appropriate triage at admission and effective protocols to optimize care are also fundamental to improving outcomes in this vulnerable patient population.

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