

Frailty Status and Outcomes of COVID-19 Patients Admitted to an Intensive Care Unit

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Dear Editor,

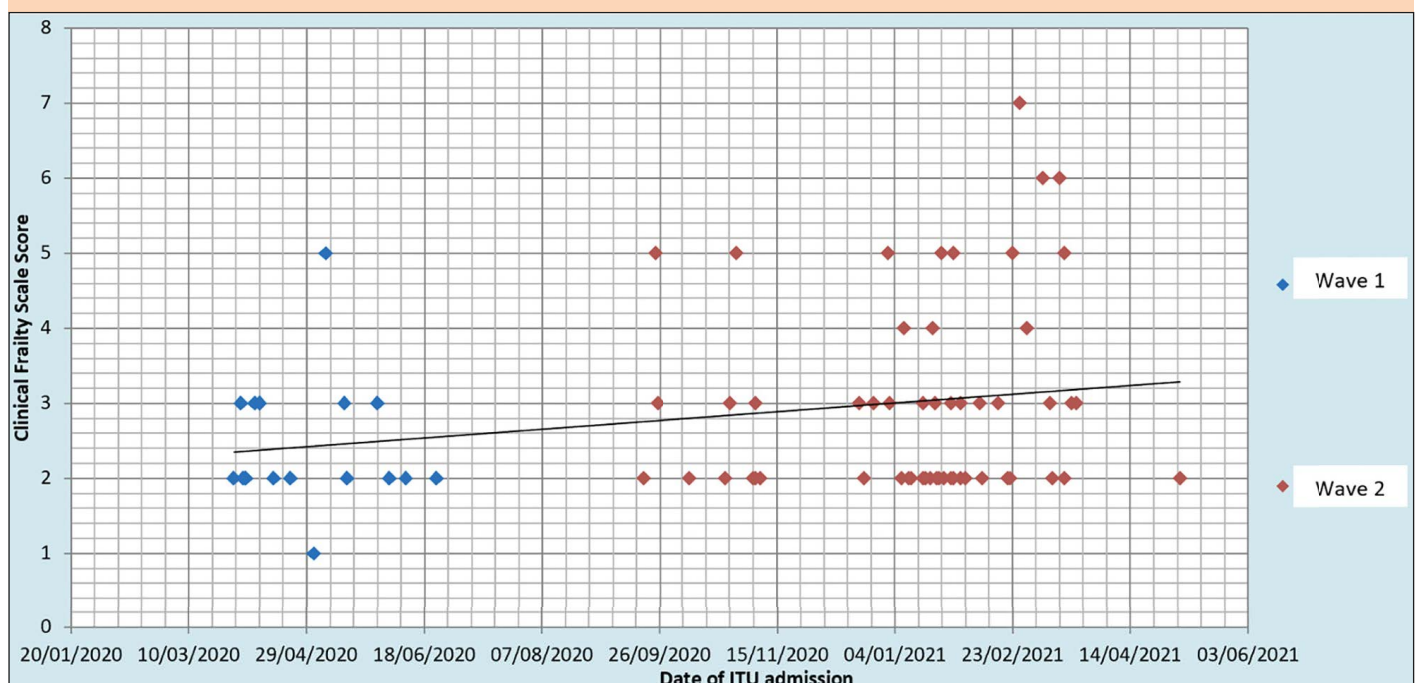
Frailty assessment using the Clinical Frailty Scale (CFS) has been incorporated into COVID-19 decision aids as frailty highlights risk of poor outcome which can guide future care (1, 2). The critical care patient population continues to trend towards a younger, fitter and less co-morbid population (3). Yet, COVID-19 is a disease that disproportionately affects the elderly; people aged over 65 years represent more than 50% of Intensive Care Unit (ICU) admissions and account for 80% of mortality (1). There are subsequent ethical considerations as to how resources were and continue to be allocated. For this reason, it is relevant we understand how frailty has impacted clinical decisions which may then drive improvements in future practice. Frailty has sustained relevance in a critical care environment with continual scarcity of resources (3).

We undertook a service evaluation of the mortality and hospital outcomes of COVID-19 positive patients admitted to Ysbyty Gwynedd (YG) ICU from 01/03/2020 to 01/06/2022.

We considered the effect of ICU patients' pre-admission frailty on their subsequent outcomes as well as comparing how CFS scores of admitted patients changed over the evaluation period. Patients testing positive for COVID-19 that were admitted to ICU were the sole population of interest. Patients aged 18 or over were considered eligible for the evaluation and patients with suspected COVID-19 that tested negative were excluded. Retrospective data was sourced from the Intensive Care National Audit & Research Centre (ICNARC) database, handover notes and clinical files. CFS scores were used to dichotomise the cohort into two distinct groups; one group with CFS scores 1-4 was defined as fit or vulnerable and the second group scoring between 5-9 was defined as frail. Patients were then assigned a pandemic 'wave' based on their date of admission: admission between 01/03/2020 to 01/09/2020 were assigned 'Wave 1' and between 01/09/2020 to 01/06/2021 'Wave 2'.

72 COVID-19 patients were included in the service evaluation; 65% of patients were male and the mean age was 59 years (SD 13). The population had a mean ICNARC score

Figure 1. CFS scores of admitted ITU patients in Wave 1 and Wave 2



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of 13.4 (SD 6.8), a mean APACHE-II score of 17.2 (SD 5.4); the predicted mortalities were 21.2% and 19.9% respectively. ICNARC reported 'significant' co-morbidity in ten patients (13.9% of cohort); six of these patients had previous severe respiratory disease. The overall in-hospital mortality was 30.6%.

The frail group of patients experienced worse outcomes than their fitter counterparts; in-hospital mortality rate was higher (35.8% vs 29.3%), mean length of stay in survivors longer (25 vs 17 days), and ventilator use more frequent (64.3% vs 46.6%). The average CFS score of the admitted ICU patient increased over the evaluation period (see Figure. 1). In Wave 1, 5.9% of admitted patients were classified as frail compared to 21.8% in the Wave 2.

Frailty describes a lack of physiological reserve to overcome the external stressors presented by disease (4). COVID-19 presents as a respiratory disease and subsequent physiological stressor that disproportionately effects males, the elderly and those with pre-existing comorbidities (1, 2). As our findings support, albeit with a small patient population, that frailty is a useful tool to highlight risk of poor outcome in COVID-19 patients (5). Moreover, we recorded a higher experienced mortality compared to that predicted by ICNARC and APACHE-II. This is consistent with the ICNARC report findings (6); COVID-19 adds an extra element of mortality that the predictive scores fail to capture.

A higher proportion of frail patients were admitted in Wave 2; this change might be explained by perceived resource pressures influencing human based decisions on admission. Clinicians may have been less likely to admit frail patients at the early stages of the pandemic when the ability of critical care resources to meet increasing demand was unknown or feared to be inadequate (7). Alternatively, the difference in detected frailty could reflect a changing population of COVID-19 positive patients over time. As the pandemic progressed a greater proportion of frail patients may have contracted

COVID-19 which will have been subsequently mirrored in ICU admissions.

It remains important to acknowledge that frailty alone should not be used to define ceilings of care since those with high levels of frailty can still experience successful outcomes (8). It is therefore concerning that fewer frail patients in this centre were admitted to ICU at the start of the pandemic. Further research might consider the repeatability of this finding in other centres. It is important to understand how human factors influence clinical decision-making in times of increased demand for resources to ensure equitable care. In future we suggest frailty is considered amongst the broader clinical picture of each patient but not as a stand-alone prognostic tool. Frailty assessment might form an important element of ICU decision-making in turn helping to ensure care does not disadvantage those who can be considered both as fit and elderly.

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