

EDITORIAL



# “Hang on, I haven’t seen this patient yet...”: near simultaneous admissions to the ICU

Matthew H. Anstey<sup>1,2\*</sup> , Hayley B. Gershengorn<sup>3,4</sup> and Laura Hawryluck<sup>5</sup>

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You are called to the ED to see an elderly woman who needs emergent admission to your intensive-care unit (ICU) for respiratory failure. At the same time as you are bringing her up from ED, a patient on the ward is being rushed to the ICU by the outreach team. Naturally, the only open ICU beds are on opposite sides of the unit, the furthest distance apart that it is possible for two patients to be....

Every ICU clinician has experienced the stress when two or more very unstable patients are admitted to the ICU at the same time. The need to provide timely, personalized care to both patients simultaneously strains the entire team; and frequent interruptions are known to create significant cognitive load and be associated with burnout [1, 2]. ICU strain relates to the concept of imbalanced supply of and demand for critical care services [2]. Such strain has been previously operationalized using ICU census, number of new admissions, and average patient acuity [3]. Strain has been shown to affect the appropriate ordering of venous thromboembolism prophylaxis, and lead to earlier decisions to limit cardiopulmonary resuscitation [4, 5].

In this issue, Kashiouris et al. [6] evaluate the impact of a more dynamic form of ICU strain by undertaking a retrospective cohort study in a single ICU exploring the effects of “near simultaneous admissions” (NSA) on patient outcomes. This was a well-staffed ICU, with two teams of doctors (one attending, one fellow, and two or more junior doctors) as well as the nursing and allied health staff. The “elapsed time since last admission” (ETLA) was used to define an NSA; a patient was

considered an “NSA” if he/she was admitted <55 min after the last admission (1st quartile of cohort ETLAs; the median ELTA for NSAs: 24.3 min). They found that NSAs had worse outcomes than non-NSA patients—both a higher odds of death [odds ratio (95% confidence interval): ICU—1.23 (1.04–1.44); hospital—1.20 (1.05–1.35)] and lower odds of discharge home (0.91 (0.84–0.99)). Moreover, the closer two ICU admissions occurred, the higher the odds of death for the second patient. And, these results may actually underestimate the true effects of near simultaneous ICU admissions, as the authors did not consider the first patient in each NSA pair as “NSA” in their primary model (Fig. 1). Assuming that a new NSA admission would pull resources away from the first “non-NSA” patient, the control group may have actually been biased to have worse outcomes than truly “non-NSA” patients would have. While their post hoc analysis looking at Time until the Next Future Admission (TNFA) aimed to address this issue, in this model, only the first patient of the NSA pair was considered “NSA”; a model including both patients in the pair as “NSA” may uncover an even stronger association. The geographical location of NSA admissions within the ICU has not been studied, but may contribute to adverse patient outcomes.

While Kashiouris et al. give an objective framing to a familiar phenomenon, the next step is to formulate potential solutions to confront the challenges of NSAs. The authors suggest that spacing out less sick or elective admissions could allow the ICU teams to recharge in time for the next admission. However, if these patients are sicker than the team realizes, then these delays in admission may actually result in worse outcomes [5, 7]. Alternate solutions include creating flexibility within the available staffing to attend to new admissions such as switching new admissions between intensivists if there is more than one available, or in academic centers, having the staff intensivist triage patients and

\*Correspondence: matthew.anstey@health.wa.gov.au

<sup>1</sup> Intensive Care Department, Sir Charles Gairdner Hospital, Hospital Avenue, Nedlands, Perth, WA 6009, Australia

Full author information is available at the end of the article

assign the junior staff appropriately to the new admissions. In the unit studied, this flexibility was not used, as the authors report that “it was exceedingly unusual for the non-admitting team to accept admissions in a non-admitting day, regardless of how busy the other team” was. Furthermore, the paper does not describe whether there was a protocol for how admissions were received including standard delegations of tasks to the inter-professional members of the ICU team.

We suggest that the first step towards protocolizing a response to NSAs requires the ICU to recognize that they are in a “near simultaneous admission” situation, and then to respond accordingly. Some of these responses may be (1) the deployment of checklists developed a priori to promote a culture of patient safety, (2) creation of an intra-team process of systematically assigning tasks to promote timely resuscitation and stabilization of new patients (e.g., delegation of bloodwork ordering and line insertions by inter-professional team members), or (3) creation of team timeout and review processes after initial NSA stabilizations to ensure completeness of treatment plans are maintained for both patients. Such actions may also assist in communication to the patients’ family members to maintain their awareness of the patients’ course in ICU which should not be superseded by an NSA situation.

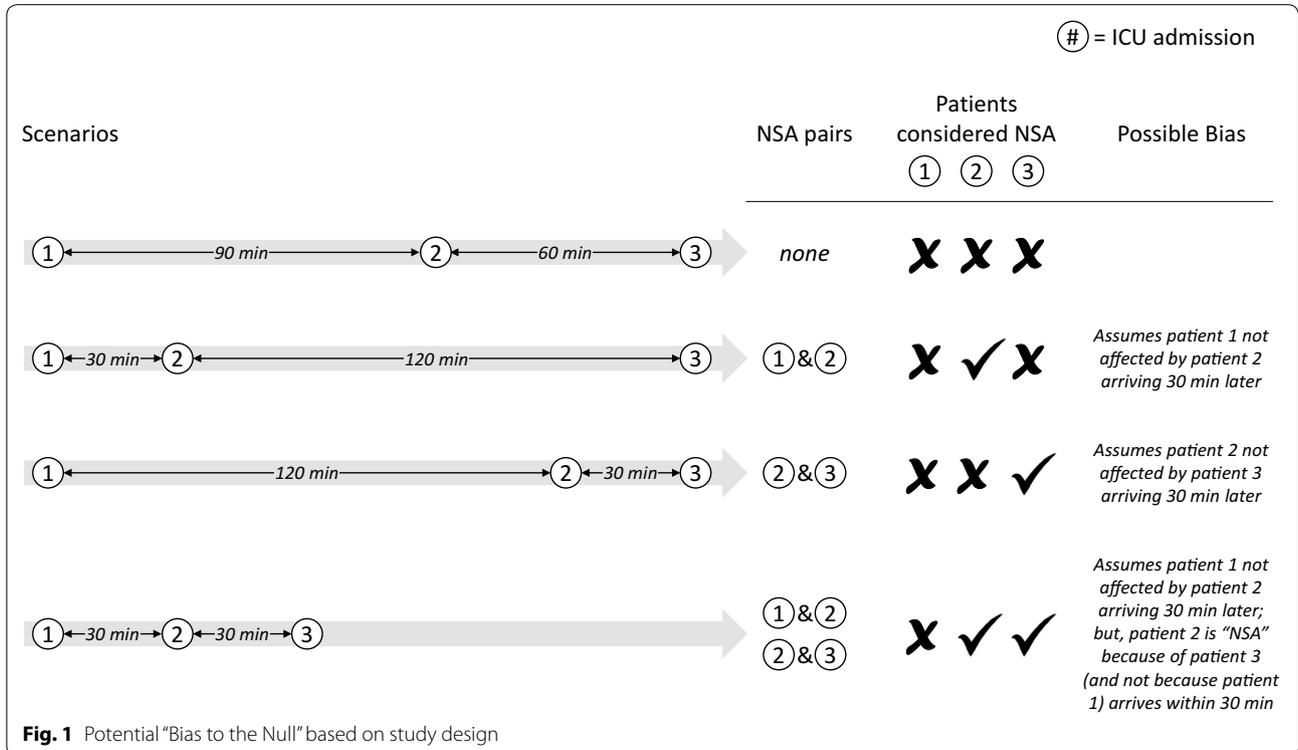
**Take-home message**

Near simultaneous admissions (NSAs) to the ICU stretch the resources of the receiving clinical team, and result in worse outcomes for patients.

Clinicians should consider how they and their teams respond to NSAs and develop methods to respond to them.

The main limitation of this study, as the authors point out, is the generalizability of the results from a single medical ICU to other medical ICUs—where potential strategies to address NSAs such as those aforementioned may already be in place. The study may not be generalizable to ICUs with less staffing, but should still prompt all ICUs, regardless of resources, to reflect on to how they respond to NSAs. As intriguing is the external validity of these results to non-medical ICUs. As a direct result of scheduling, post-operative ICU admissions often cluster closely together in the afternoon [8]. Understanding whether such clustering of planned surgical admissions is detrimental to patient outcomes is also essential to optimizing the quality of care of this patient group [9].

Nonetheless, whatever the critical care setting, this paper by Kashiouris et al. is provocative and highlights the importance of recognizing the impact NSAs may have on ICU team performance and patient outcomes.



**Fig. 1** Potential “Bias to the Null” based on study design

Their results are a wake-up call for the need to identify ETLA fracture points and effectively plan for these frequent moments of ICU strain as part of a new frontier in quality of care and patient safety.

#### Author details

<sup>1</sup> Intensive Care Department, Sir Charles Gairdner Hospital, Hospital Avenue, Nedlands, Perth, WA 6009, Australia. <sup>2</sup> School of Medicine, University of Western Australia, Perth, Australia. <sup>3</sup> Division of Pulmonary, Critical Care, and Sleep Medicine, University of Miami Miller School of Medicine, Miami, FL, USA. <sup>4</sup> Division of Critical Care Medicine, Albert Einstein College of Medicine, Bronx, NY, USA. <sup>5</sup> Interdepartmental Critical Care Medicine, University of Toronto, MSNICU Toronto Western Hospital, University Health Network Canada, Toronto, Canada.

#### Compliance with ethical standards

#### Conflicts of interest

The authors have no conflicts of interest to declare.

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