EDITORIAL

Hospitalizations for patients with acute respiratory exacerbations: In pursuit of rest or recovery?

Few would deny that optimizing patients' symptoms and physical activity (PA) levels during acute respiratory exacerbations represent principal aims of acute hospital-based clinical care. Evaluations of symptoms such as dyspnoea and cough are regularly undertaken by health professionals throughout admissions, with their changes frequently influencing treatment decisions. The same cannot, however, be said for PA levels. Before reading on, consider how active your patients are during a hospitalized respiratory exacerbation. How much do you think PA levels change from admission to discharge? Observations from a recently published study in *Respirology* might change your perspective.

Orme *et al.*[1] report a technical analysis of objectively measured PA data (SenseWear Armband Pro 3; BodyMedia Inc., Pittsburgh, PA, USA) collected from a previous large randomized controlled trial involving patients with acute exacerbations of various respiratory diseases (mainly chronic obstructive pulmonary disease (COPD) but also chronic asthma, bronchiectasis and interstitial lung disease).[2] PA is an important outcome gaining increasing recognition over the past decade. In stable COPD, PA independently predicts readmissions[3,4] and is a stronger predictor of mortality than lung function.[5] It might therefore come as a surprise to learn that it has received scant attention during acute exacerbations. For their analysis, Orme *et al.* pooled group data together to determine the appropriate amount of time (h/day and days/admission) required to monitor PA to derive data reflective of the hospitalization period. This is important as existing recommendations for this patient group (≥8 h/day for ≥4 days/week)[6] originate from the stable disease state and may be impractical to apply during an acute admission.

Orme *et al.* found PA levels to be very low and, somewhat surprisingly, stagnant throughout the admission (mean: 586 (95% CI: 427–744) steps/day on day 2 vs 652 (95% CI: 493–812) steps/day on day 7). It is not clear whether these mean data may have concealed clinically relevant changes in PA at an individual level, if they existed. The consistency of low PA levels during hospitalization meant that a representative measurement of PA reflective of the entire admission could be derived from a single day of data collection, with 11 waking hours of device wear time providing acceptable sample size retention (≥80%). This overt difference to the validation criteria during stable disease[6] is largely due to the reduced variability in PA observed within the inpatient environment, likely attributable to the reduced opportunity for acute inpatients to be physically active and participate in functional activities of daily living (e.g. meal preparation, stair climbing and outdoor walking). Consideration of these unique environmental constraints gives rise to some interesting questions. Would hospital environment constraints impose similar homogeneity on other PA metrics (e.g. time spent in activities of different metabolic equivalent values) or measures of sedentary behaviour? Could such data homogeneity render a simple acute-specific PA questionnaire accurate, overcoming the common issue of overestimation of PA recall bias?[7] Would rehabilitation hospital environments yield different results to acute hospital environments, considering their focus on restoration of physical function? The precision of PA measurements is known to differ slightly between monitors, meaning the use of devices other than the SenseWear armband (which itself is known to less reliably measure step counts compared to other PA metrics)[8] would likely yield different absolute step counts.

It is difficult to argue that 1 day of data collection does not represent a clinically feasible approach to the collection of objective inpatient PA data. Despite this, such measures do not feature in current acute respiratory care models, in part related to barriers such as limited access to equipment and/or expertise. Whether the findings of Orme *et al.* will increase the uptake of PA measurement in acute clinical care by those who work with such patients remains to be seen. It is this author's opinion that the transition will be slow until a crucial missing piece of the puzzle is found: proof of clinical relevance. We are yet to observe the impact of inpatient PA levels on important clinical outcomes in respiratory medicine. This could take the form of a useable predictive or prognostic marker, a discriminative factor to stratify low- versus high-risk patients, or just a measurable parameter to facilitate tailored PA reactivation interventions.

Arguably one of the biggest, but most challenging, issues to arise from the study of Orme *et al.*[1] is the concerning reality that acute hospital settings appear to better promote rest than they do recovery. This is at odds with many therapeutic aims. Overcoming this issue is not likely to be simple or rapid. Education of patients and staff and the fostering of pro-'active' ward cultures are useful starting points. Examples in other areas such as geriatric medicine include the implementation of initiatives to tackle 'pyjama paralysis'.[9] Future innovations to hospital design and ward layouts seem crucial but are reliant on significant financial investment, which imposes additional complexity. The

overcoming of environmental constraints may not yet feature as a prominent part of current clinical care for patients with acute respiratory exacerbations; however, when future evidence of clinical impact emerges (as it likely will), let us not be 'inactive' to driving necessary change. Many of us presently lack the answers to this conundrum, yet it could be timely to start planning for the future.

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