not assess subjective ratings of cough intensity in the patient's own environment to enable a comparison with quality of life. As Dr Turner points out, our sample size of subjects who underwent study of spontaneous cough was underpowered for comparisons with quality-of-life measures, which also may be relevant. A more suitable comparison may be possible once ambulatory measures of cough intensity are developed. Combining longitudinal assessments of cough intensity with already available measures of cough frequency may allow a comprehensive objective assessment of cough and help establish their relationship with patients' perception of cough severity and effect on quality of life.

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Nighttime ICU Staffing and Mortality

Still in the Dark

To the Editor:

Ideal ICU physician staffing remains a topic of ongoing debate, with studies presenting conflicting results regarding the benefit of 24/7 intensivist coverage. We read the article in *CHEST* (April 2015) by Kerlin and colleagues[1] with great interest. The authors reported no mortality benefit with intensivist presence in the ICU, but, surprisingly, also found lower adjusted mortality for nonphysician ICUs when compared with other staffing models.

The authors suggest that overly aggressive care and a failure to transition toward end-of-life care may contribute to the perceived "benefit" of nonphysician ICUs. While we agree that this likely contributes to the observed effect, we wonder if the authors considered two additional hypotheses that may partially explain their surprising findings.

As the authors have expertise in the impact of hospital transfers on artificially lowering ICU mortality,[2] we wonder if they explored the role of transfers in explaining the association between staffing and mortality seen in their study cohort. Nonphysician ICUs are more common in lower volume, community hospitals.[3] Studies show that hospital concerns about public reporting of mortality result in more acute-care transfers for critically ill patients.[4] It is plausible that sicker patients cared for in nonphysician ICUs in the study by Kerlin and colleagues,[1] given their higher severity of illness, were more likely to be transferred to higher-level care centers, making mortality appear "better" at nonphysician hospitals. This residual confounding by severity of illness in patients transferred from outside hospitals to intensivist hospitals may mask some of the effect of ICU staffing on subsequent mortality.

Additionally, we question how the use of telemedicine was defined in the ICU staffing models. ICU telemedicine has increased dramatically in US ICUs. Studies of tele-ICU care suggest that remotely delivered ICU care may be of particular benefit in smaller community hospitals without a physician presence, with greatest benefit seen among the sickest patients.[5] It is possible that use of telemedicine, if not defined as physician staffing, may have led to misclassification of physician involvement, altering the overall results. It is unclear to what degree

this misclassification may have impacted the study results.

We commend the authors for the scope of their study and welcome its contribution to our understanding of the relationship between ICU staffing and mortality. We hope that the considerations raised in this letter will further our understanding of the complex relationships between organizational care factors and patient outcomes.

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Relationship Between OSA Clinical Phenotypes and CPAP Treatment Outcomes

To the Editor:

There is a growing awareness of heterogeneity between patients with OSA in terms of symptoms and comorbidities.[1] The aim of this study was to identify clinically meaningful OSA phenotypes by means of cluster analysis and to evaluate their relationship with relevant CPAP outcomes.

Latent class analysis[1,2] was used to identify phenotypes based on 13 clinically relevant variables in 5,983 patients with newly diagnosed moderate-to-severe OSA from the Institut de Recherche en Santé Respiratoire des Pays de la Loire multicenter prospective sleep cohort. Further methodological details are found in e-Appendix 1 and e-Table 1. Five distinct clusters with marked clinical differences were identified (Fig 1, e-Tables 2, 3). Cluster 1 was characterized by a marked female predominance, high rates of insomnia complaints, depressive symptoms, obesity, and associated comorbidities. Patients from clusters 2 and 3 had marked typical nocturnal and diurnal OSA symptoms and frequent depressive symptoms. Cluster 2 differed from cluster 3 by a male predominance and more frequent comorbidities. Patients in cluster 4 had nocturnal OSA symptoms and insomnia complaints but a low prevalence of excessive daytime sleepiness, depressive symptoms, and comorbidities. Cluster 5 included a marked predominance of minimally symptomatic male patients older than 65 years with a high rate of comorbidities.

Treatment outcomes were then compared across clusters in the subgroup of patients in whom CPAP had been prescribed for at least 6 months. A strong agreement (kappa 0.92) was observed between OSA clusters identified in the entire baseline population (n = 5,983) and in the CPAP follow-up population (n = 3,090; e-Fig 1). CPAP treatment success was defined as daily CPAP use ≥4 h and either a decrease in Epworth sleepiness score (ESS) ≥4 points in patients with a baseline value ≥11 and/or an increase of at least 7 points in the energy/vitality component score of the Short Form 36 questionnaire. After adjustment for socioeconomic status, baseline apnea-hypopnea index, and ESS, patients from clusters 1, 4, and 5 that we propose to label as "female OSA," "mildly symptomatic OSA," and "comorbid OSA," respectively, had a lower likelihood of CPAP treatment success than patients with "severe OSA syndrome" from cluster 3 (Table 1, e-Table 4).

Our findings suggest that cluster analysis provides an opportunity for broader than usual pretreatment clinical characterization of patients with OSA. The longitudinal association between OSA clusters and CPAP treatment outcomes remained significant after adjusting for criteria commonly used to assess OSA severity and to prescribe CPAP therapy, including socioeconomic status, apnea-hypopnea index, and ESS.[3-5] These findings suggest that the proposed subtype classification provides relevant