aminophylline for status asthmaticus in the PICU (e-Appendix 1). The survey was distributed three times at 3-week intervals, and responses were anonymous. The study protocol and questionnaire were approved by the Vanderbilt University institutional review board (protocol No. 101136).

Responses were received from 39 of the surveyed program directors (67%). Twenty-three of those responses (59%) indicated that their PICUs currently use aminophylline for status asthmaticus. All positive respondents (100%) indicated that aminophylline use was based on clinical judgment rather than institutional protocol. Twenty of those using aminophylline (87%) stated that the medication was used only when other treatments had failed. Fourteen of the respondents (61%) whose institution used aminophylline identified a therapeutic range for serum aminophylline levels. Six of these respondents (43%) identified a therapeutic serum level of 10 to 20 $\mu\text{g/mL}$ for aminophylline, the generally accepted therapeutic range.⁴ There was variation in the reporting of both the minimal effective serum level (mean, 10 $\mu\text{g/mL}$; range, 5–15 $\mu\text{g/mL}$) and the toxic serum level (mean, 17.9 $\mu\text{g/mL}$; range, 10–25 $\mu\text{g/mL}$).

Aminophylline continues to be used to treat status asthmaticus in PICUs, as determined by surveying fellowship training programs, despite limited evidence for efficacy and expert guidelines recommending against its use for this purpose. If pediatric critical care physicians are to continue to use this drug, further studies are recommended and warranted to assess its efficacy and safety.

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What Is the Pulmonary Rehabilitation Adapted Index of Self-Efficacy Tool Actually Measuring?

To the Editor:

We read with great interest the study by Vincent et al¹ recently published in *CHEST* (December 2011). We commend the authors for expanding the field of self-efficacy research for patients with COPD.

The Pulmonary Rehabilitation Adapted Index of Self-Efficacy (PRAISE) tool contains 15 items, 10 assessing “general” self-efficacy and five assessing self-efficacy specific to pulmonary rehabilitation (PR). The PRAISE tool showed a significant response following PR; however, given the task-specific nature of the self-efficacy construct,^{2,3} we wonder if the increase in self-efficacy was predominantly related to an improvement in the PR-specific items rather than in general self-efficacy. We believe the article would have benefitted from an analysis of individual item performance. If the improvement had been related to PR items only, it may have allowed for abbreviation of the tool. On the other hand, improvement of the general self-efficacy items would suggest that PR benefited areas other than mastery of exercise, such as problem-solving and coping skills (critical aspects of behavioral change for self-management), even though changes in behavior following PR were not measured in this study.

Our interest in exploring the task-specific nature of the self-efficacy construct emerges from our own research. We recently completed the validation of two physical activity questionnaires in patients with COPD compared with objectively measured physical activity, and we included self-efficacy as a possible covariate. We found that general self-efficacy (Stanford Self-Efficacy for Managing Chronic Disease 6-Item Scale) was not significantly associated with physical activity. If the proposed analysis confirms that the PR-related items were responsible for the measured improvement, then our results are congruent and collectively highlight the importance of creating task-specific self-efficacy tools.

We agree with the authors that self-efficacy for activities prescribed in PR may contribute to a critical behavior: adherence to the PR program. Regrettably, the pre-PR PRAISE score showed no association with completion of the program. There were, however, correlations between the change in the Chronic Respiratory Questionnaire emotion and mastery domains (which may represent improved behaviors) and the change in the PRAISE score following PR. We believe a mediation analysis, as described previously,^{4,5} is the most appropriate way to determine if the change in self-efficacy is responsible for the improvements in these domains rather than the direct effect of the PR itself.

We believe the proposed analyses will help determine what the PRAISE tool is actually measuring. We are convinced that additional research aimed at understanding the behavioral aspects of PR is critically needed.

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Response

To the Editor:

We thank Drs DePew and Benzo for their interest in the Pulmonary Rehabilitation Adapted Index of Self-Efficacy (PRAISE) tool and their comments regarding general and task-specific self-efficacy. The PRAISE tool¹ was devised as an adaptation of the well-validated General Self-Efficacy Scale,² with the intention that it might be integrated comprehensively into our pulmonary rehabilitation (PR) program. We specifically chose a tool that would measure general self-efficacy as well as the task-specific items related purely to rehabilitation.

As practitioners, we would hope to enhance task-specific self-efficacy and promote positive behavior change, particularly as a result of rehabilitation. Indeed, previous studies have devised such tools to demonstrate that specific, rather than generalized, expectations can mediate behavior change in patients with

COPD.³ However, the knowledge and skills that a rehabilitation program imparts may also promote a change in self-efficacy, which may expand into other areas of our patients' lives, assisting their ability to cope overall. In this context, the measurement of general self-efficacy seems prudent. It is interesting that Drs DePew and Benzo raise the issue of general self-efficacy with physical activity. Although an improvement in physical activity is a core element of PR, we strongly believe that the overall effect of the program achieves much more than this: behavioral change, self monitoring, problem solving, action planning, goal setting, education, and social interaction. These effects are more likely to be observed by asking general questions, and so perhaps a task-specific tool may not be sufficient for such a holistic intervention.

The association between general and specific self-efficacy is complex. We are currently examining the internal consistency of both the general and task-specific questions of the PRAISE tool. It may transpire that it will be valuable to consider task-specific and general scores as separate domains.

Health-specific self-efficacy is a patient's optimistic "can-do" belief regarding their capability to problem solve, their ability to consider possible precautions that may affect them, and their strength to embrace a healthier lifestyle. In the United Kingdom, patients often describe this anecdotally as their level of confidence. Measuring this construct is challenging; however, we hope the PRAISE tool will reinvigorate the debate about the importance of self-efficacy in PR.

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