As anyone in the clinical practice of sleep medicine is keenly aware, the traditional approach to the diagnosis of and initiation of continuous positive airway pressure (CPAP) therapy for obstructive sleep apnea (OSA) is undergoing a sea change. Since 2008, and the Centers for Medicare and Medicaid Services (CMS) approval of home sleep testing for the diagnosis of OSA when CPAP is to be prescribed, the door to the non-laboratory diagnosis of sleep apnea has been opening ever more steadily. The concern many sleep medicine practitioners have is that, while there may be some advantages to home testing for sleep apnea in terms of a more realistic “ecology” for the patient, clinical outcomes will not be as good as they are with sleep laboratory and PSG diagnosis and CPAP titration.

To address the need for better evidence supporting the use of home OSA testing, the evidence base for home sleep apnea testing has been also been growing. Since 2007 we have seen clinical trials published that have begun to consistently demonstrate that clinical outcomes relevant to OSA patients are essentially the same regardless of whether the diagnosis and initiation of positive airway pressure therapy is performed in the home setting or in the laboratory setting. In this edition of SLEEP, Rosen and colleagues have published the latest contribution to this literature, the HomePAP study.

The HomePAP study investigators performed a multisite, randomized, open label, parallel group clinical trial, which compared a home-based unattended sleep apnea monitor for the diagnosis of OSA, and then followed that with a trial of autotitrating CPAP for patients who were positive for OSA on the diagnostic study with a sleep laboratory-based diagnostic polysomnogram followed by a CPAP titration performed in a sleep laboratory. The study population was middle-aged (average age 46 ± 12 years), 60% male, 64% Caucasian, and obese (average BMI 37.2 ± 8.7) and lived in proximity to 1 of 7 academic sleep medicine centers where they were referred for evaluation. The population was prescreened significantly to select for patients who were excessively sleepy, as determined by an Epworth Sleepiness Scale value of 12 or higher, and likely to be overweight due to the requirement they have an increased neck circumference of a minimum of 43 cm. Finally, all patients who went on to the treatment phase had a minimum apnea-hypopnea index (AHI) of 15 events per hour. Thus, subjects in this study appear to be very typical of the kinds of patients referred to sleep medicine centers for an OSA evaluation.

The key findings of the HomePAP study demonstrated that the CPAP usage was 4.7 ± 2.1 hours in the home setting arm compared with 3.7 ± 2.4 hours in the sleep laboratory arm. Moreover, the home evaluation arm used autotitrating CPAP therapy 62.8% ± 29.2% of the nights in the study, compared with 49.4% ± 36.1% of the nights in which CPAP was used by those subjects in the sleep laboratory arm. Furthermore, functional outcomes including the Epworth Sleepiness Scale score and the Functional Outcomes of Sleep Questionnaire (FOSQ) both improved significantly from baseline to the 3-month assessment point during the CPAP intervention within the 2 groups. There was no difference between the groups for either of these outcomes at the 3-month point.

The HomePAP trial is the largest study to date examining a home-based diagnostic and treatment algorithm compared to a sleep laboratory based evaluation and treatment approach. However, there are 4 previous North American randomized trials with findings very similar to the HomePAP study. Mulgrew and colleagues from Vancouver, BC demonstrated that home autotitrating CPAP treatment for OSA yielded clinical outcomes equivalent to those achieved in a traditional sleep laboratory CPAP titration. Patients were screened for sleep apnea symptoms and underwent a home sleep apnea test prior to randomization in their study. Berry and colleagues performed a randomized trial of 106 patients referred to a sleep medicine clinic at a Veterans hospital. After prescreening to select for patients with a high likelihood of sleep apnea, the investigators found that after 3 months of CPAP therapy based on either a home autotitrating CPAP trial or a laboratory-based CPAP titration, CPAP usage and functional outcomes were comparable. Similar findings were found by another group of investigators from Canada using a randomized crossover trial design. Finally, a VA trial of 296 patients randomized to a home diagnostic and autotitrating CPAP algorithm versus a traditional sleep laboratory approach showed that improvement in the FOSQ at 3 months was identical between the 2 groups, and that CPAP adherence was not significantly different between the home group and the sleep laboratory group, with a nonsignificant trend toward better CPAP usage in the home arm compared to the laboratory arm. The HomePAP study by Rosen et al. showed a similar trend. This finding of a trend toward better adherence in the VA trial and the HomePAP study is
intriguing, has not been fully explained yet, and deserves further study.

Is the home diagnosis and initiation of CPAP therapy for sleep apnea now “ready for prime time?” The accumulated evidence strongly supports this. The results from 5 randomized trials in the past 5 years demonstrate essential equivalency between the home diagnostic and treatment approach and the lab diagnostic and treatment approach for initial CPAP adherence and initial functional outcomes. Yet, not all the questions have been answered. Important concerns relating to improvement in sleepiness and maintenance of alertness, long-term adherence to therapy, impact on other comorbidities, and finally, patient preferences about diagnostic and treatment options need to be further examined. The HomePAP study approach of selecting patients on the basis of sleep apnea symptoms and focusing home testing for OSA in these more symptomatic patients will appeal to many practitioners. This approach may give confidence to practitioners beginning to adopt this diagnostic and treatment approach in their practices. It is very likely that over the next few years home sleep apnea testing will continue to grow and may replace polysomnography as the initial diagnostic test for many patients. When this occurs, sleep medicine will have evolved into a discipline with more than one test to evaluate its patients, ideally fitting the right test to the right patient in the right setting. This is a goal everyone should be able to support.

CITATION
Atwood CW. “The times they are a changin:” home diagnosis of sleep apnea has arrived. SLEEP 2012;35(6):735-736.

DISCLOSURE STATEMENT
Dr. Atwood has indicated no financial conflicts of interest.

REFERENCES