



## Q/ Does office spirometry improve quit rates in smokers?

### EVIDENCE-BASED ANSWER

**A/ IT DEPENDS.** Simply performing spirometry and offering cessation advice doesn't improve quit rates in patients who smoke (strength of recommendation [SOR]: **A**, systematic review of randomized controlled trials [RCTs]). However, when

the spirometry results are communicated in terms of "lung age," smokers are more likely to quit (SOR: **B**, large RCT). Patients with abnormal spirometry results may be more likely to quit than patients with normal results (SOR: **B**, cohort studies).

### Evidence summary

A systematic review of 3 RCTs with a total of 649 participants evaluated office spirometry as a motivational tool to improve quit rates by comparing spirometry plus cessation advice with cessation advice alone. All participants were men and women 19 to 75 years of age recruited from outpatient clinics.<sup>1</sup>

In 1 trial, the intervention group received repeated counseling at 4 visits and underwent spirometry; the control group had 1 counseling session and was given a brochure. In the other 2 trials, the intervention group had both carbon monoxide measurements and spirometry, and all participants received more extensive counseling, including cessation skills training.

At 9 to 12 months' follow-up, quit rates ranged from 6% to 24% in the intervention groups vs 5% to 14% in the control groups (not significantly different).<sup>1</sup>

A subsequent study randomized 221 smokers to receive either spirometry plus brief cessation advice or advice alone. Researchers recruited patients 15 to 80 years of age who were willing to quit smoking from 16 general practice clinics in Belgium. Fifty-one percent of patients in both groups used nicotine replacement therapy (a larger percentage than is typical in studies done in the United States). At 6, 12, and 24 months, 5%, 2%, and 5% more

smokers, respectively, from the spirometry group quit smoking compared with the control group, but this difference was not significant.<sup>2</sup>

### Reporting spirometry results in terms of lung age may spur quitting

One RCT found significantly improved quit rates when patients who smoked were given their office spirometry results in terms of "lung age" (the age of an average healthy person with similar spirometry results) rather than as forced expiratory volume in 1 second (FEV1). Investigators performed office spirometry and gave smoking cessation advice to 561 smokers older than 35 years who were recruited from 5 general practices. They randomized patients to receive their spirometry results as either lung age or FEV1 and recorded quit rates at 12 months (smoking cessation was verified by measuring blood levels of carbon monoxide).

Patients whose spirometry results were reported as lung age were significantly more likely to quit than smokers whose results were given as FEV1 (13.6% vs 6.4%;  $P=.005$ ; number needed to treat [NNT]=14 smokers counseled using lung age to cause 1 more patient to quit). Smokers with normal lung ages were no more likely to quit than smokers with abnormal results.<sup>3</sup>

CONTINUED

Jennifer Spata, MD;  
Gary Kelsberg, MD  
Valley Family Medicine,  
Renton, Wash

Sarah Safranek, MLIS  
University of Washington  
Health Sciences Library,  
Seattle



Simply performing spirometry and offering smoking cessation advice doesn't improve quit rates.

**Patients with moderate to severe airflow limitation showed significantly higher quit rates when compared with patients with mildly abnormal spirometry.**

### Abnormal results also may be a motivator

However, 3 prospective cohort studies demonstrated that patients with abnormal spirometry results were more likely to quit than patients with normal spirometry. In the first study, 4494 patients with at least 10 pack-years of smoking from 10 outpatient chest clinics in Poland underwent spirometry and were counseled to quit smoking; 1177 had abnormal spirometry results.

One year later, 16.3% of smokers with abnormal results had quit smoking, compared with 12% in the group with normal spirometry ( $P=.0003$ ; NNT=23).<sup>4</sup>

The second study, also at outpatient chest clinics in Poland, evaluated spirometry plus cessation advice among 558 smokers, 297 of whom had abnormal spirometry results. At 1 year, 10.6% of patients with abnormal results had quit, compared with 8.4% of patients with normal lung function. A subgroup of 109 patients with moderate to severe airflow limitation showed significantly higher quit rates when compared with patients with mildly abnormal spirometry (16.5% vs 6.4%;  $P<.0001$ ; NNT=10).<sup>5</sup>

In the third study, 6 primary care sites in Sweden provided spirometry and brief cessation advice to 445 smokers, 119 of whom were found to have abnormal lung function. At 3-year follow-up, 29% of patients with abnormal lung function had quit smoking, compared with 14% of patients with normal lung function ( $P=.001$ ; NNT=7). Forty-five smokers with mildly abnormal lung function were recruited from this study to participate in another study, which may have biased the results toward higher quit rates among smokers with worse spirometry results.<sup>6</sup>

### Recommendations

The US Preventive Services Task Force recommends against using spirometry to screen for chronic obstructive pulmonary disease, but advocates screening all adults for tobacco use and encouraging cessation.<sup>7</sup>

The authors of a Cochrane review found insufficient evidence to recommend using biomedical risk assessment (carbon monoxide blood levels, spirometry, genetic testing for alpha-1 antitrypsin deficiency) as a smoking cessation aid.<sup>8</sup>

JFP

### References

1. Wilt TJ, Niewoehner D, Kane RL, et al. Spirometry as a motivational tool to improve smoking cessation rates: a systematic review of the literature. *Nicotine Tob Res.* 2007;9:21-32.
2. Buffels J, Degryse J, Decramer M, et al. Spirometry and smoking cessation advice in general practice: a randomised clinical trial. *Respir Med.* 2006;100:2012-2017.
3. Parkes G, Greenhalgh T, Griffin M, et al. Effect on smoking quit rate of telling patients their lung age: the Step2quit randomised controlled trial. *BMJ.* 2008;336:598-600.
4. Bednarek M, Gorecka D, Wielgomas J, et al. Smokers with airway obstruction are more likely to quit smoking. *Thorax.* 2006;61:869-873.
5. Gorecka D, Bednarek M, Nowinski A, et al. Diagnosis of airflow limitation combined with smoking cessation advice increases stop-smoking rate. *Chest.* 2003;123:1916-1923.
6. Stratelis G, Molstad S, Jakobsson P, et al. The impact of repeated spirometry and smoking cessation advice on smokers with mild COPD. *Scand J Prim Health Care.* 2006;24:133-139.
7. Task force recommends against screening for chronic obstructive pulmonary disease using spirometry [press release]. Rockville, Md: Agency for Healthcare Research and Quality; March 3, 2008. Available at: [www.ahrq.gov/news/press/pr2008/tfcpdpr.htm](http://www.ahrq.gov/news/press/pr2008/tfcpdpr.htm). Accessed September 4, 2008.
8. Bize R, Burnand B, Mueller Y, et al. Biomedical risk assessment as an aid for smoking cessation. *Cochrane Database Syst Rev.* 2009;(2):CD004705.

## We want to hear from you!

Have a comment on an article, editorial, or department?

You can send a letter 1 of 3 ways.

1. E-MAIL: [jfp@neoucom.edu](mailto:jfp@neoucom.edu)
2. FAX: 973-206-9251
3. MAIL: The Journal of Family Practice, 7 Century Drive, Suite 302, Parsippany, NJ 07054

Letters should be addressed to the Editor, The Journal of Family Practice, and be 200 words or less. They will be edited prior to publication.

THE JOURNAL OF  
**FAMILY  
PRACTICE**