

Help smokers quit: Tell them their “lung age.” <i>J Fam Pract.</i> 2008;57:584-586.	
Potential PURL Review Form: Randomized controlled trials	
SECTION 1: IDENTIFYING INFORMATION	
1.0 Citation	Parkes G, Greenhalgh T, Griffin M, Dent R. Effect on smoking quit rate of telling patients their lung age: the Step2quit randomised controlled trial. <i>BMJ.</i> 2008;336:598-600.
1.1 Editors classification of nominated study	Potential PURL Review Date: 4/24/08
1.3 Hypertext link to PDF of full article	http://www.ncbi.nlm.nih.gov/entrez/utils/fref.fcgi?PrId=3051&itool=AbstractPlus-def&uid=18326503&db=pubmed&url=http://bmj.com/cgi/pmidlookup?view=long&pmid=18326503
1.4 First date published study available to readers	3/15/08
1.5 PubMed ID	18326503
1.6 Nominated By	Jim Stevermer
1.7 Institutional Affiliation of Nominator	University of Missouri
1.8 Date Nominated	3/16/08
1.9 Identified Through	InfoPOEMs Editorial Group
1.10 PURLS Editor	Bernard Ewigman
1.11 Nomination Decision Date	4/12/08
1.12 Potential PURL Review Form (PPRF) type	RCTs
1.13 Other comments, materials or discussion	
1.14 Assigned Potential PURL Reviewer	Debbie Stulberg
1.15 Reviewer Affiliation	University of Chicago
1.16 Date Review Due	4/24/08

1.17 Abstract	<p>OBJECTIVE: To evaluate the impact of telling patients their estimated spirometric lung age as an incentive to quit smoking. DESIGN: Randomised controlled trial. SETTING: Five general practices in Hertfordshire, England. PARTICIPANTS: 561 current smokers aged over 35. INTERVENTION: All participants were offered spirometric assessment of lung function. Participants in intervention group received their results in terms of "lung age" (the age of the average healthy individual who would perform similar to them on spirometry). Those in the control group received a raw figure for forced expiratory volume at 1 second (FEV1). Both groups were advised to quit and offered referral to local NHS smoking cessation services. MAIN OUTCOME MEASURES: The primary outcome measure was verified cessation of smoking by salivary cotinine testing 12 months after recruitment. Secondary outcomes were reported changes in daily consumption of cigarettes and identification of new diagnoses of chronic obstructive lung disease. RESULTS: Follow-up was 89%. Independently verified quit rates at 12 months in the intervention and control groups, respectively, were 13.6% and 6.4% (difference 7.2%, $P=.005$, 95% confidence interval 2.2% to 12.1%; number needed to treat 14). People with worse spirometric lung age were no more likely to have quit than those with normal lung age in either group. Cost per successful quitter was estimated at 280 pounds sterling (366 euros, \$556). A new diagnosis of obstructive lung disease was made in 17% in the intervention group and 14% in the control group; a total of 16% (89/561) of participants. CONCLUSION: Telling smokers their lung age significantly improves the likelihood of them quitting smoking, but the mechanism by which this intervention achieves its effect is unclear. TRIAL REGISTRATION: National Research Register N0096173751.</p>
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SECTION 2: DETAILED STUDY DESCRIPTION

2.1 Number of patients starting each arm of the study?	281 in control group, 280 in intervention group
2.2 Main characteristics of study patients (inclusions, exclusions, demographics, settings, etc.)?	<p><u>Inclusion:</u> age 35 years or older, current smoker <u>Exclusion:</u> on oxygen, history of lung cancer, tuberculosis, asbestosis, silicosis, bronchiectasis, or pneumonectomy</p>
2.3 Intervention(s) being investigated?	All participants underwent spirometry. Intervention group was given result immediately (verbally) as <i>lung age</i> and also received written results in a letter stating lung age within 1 month.
2.4 Comparison treatment(s), placebo, or nothing?	Control group received only the result letter (within 1 month) and results were given as FEV1, not as lung age.
2.5 Length of follow up? Note specified end points e.g. death, cure, etc.	12 months
2.6 What outcome measures are used? List all that assess effectiveness.	<p><u>Primary outcome:</u> Pt has quit smoking 12 months after the intervention. Cessation verified by CO breath test and saliva cotinine level. <u>Secondary outcomes:</u> Self-reported number of cigarettes smoked per day at 12 months; new</p>

	diagnosis of COPD at 12 months
2.7 What is the effect of the intervention(s)? Include absolute risk, relative risk, NNT, CI, <i>P</i> -values, etc.	<u>Primary outcome:</u> quit rate 13.6% in intervention group vs. 6.4% in control group (difference of 7.2%, <i>P</i> =.005, CI 2.2-12.1%). NNT=14 <u>Secondary outcomes:</u> Average cigarettes/day 11.7 in intervention group vs. 13.7 in control group (<i>P</i> =.03); new diagnosis of COPD 17% in intervention group vs. 14% in control group (<i>P</i> value and CI not given)
SECTION 3: INTERNAL VALIDITY	
3.1 Study addresses an appropriate and clearly focused question	Well addressed
3.2 Random allocation to comparison groups	Well addressed
3.3 Concealed allocation to comparison groups	Well addressed
3.4 Subjects and investigators kept “blind” to comparison group allocation	Well addressed
3.5 Comparison groups are similar at the start of the trial	Well addressed
3.6 Were there any differences between the groups/arms of the study other than the intervention under investigation? If yes, please indicate whether the differences are a potential source of bias.	Significantly higher rate of history of stroke in the control group. The effect of this finding is unpredictable—it could arguably bias the results in either direction (harder to quit if you’ve had a stroke vs higher motivation to quit), and I suspect the overall effect, if any, is small.
3.7 Were all relevant outcomes measured in a standardized, valid, and reliable way?	Well addressed
3.8 Are patient-oriented outcomes	The primary outcome was smoking cessation. Given the overwhelming evidence that quitting

included? If yes, what are they?	smoking improves health outcomes, I would consider this an adequate patient-oriented outcome (comparable, for example, to amount of physical activity, the outcome used in the pedometer study we identified as a PURL).
3.9 What percent dropped out, and were lost to follow up? Could this bias the results? How?	32 of 281 dropped out in the control group and 31 of 280 in the intervention group. These numbers are so similar that the drop-out rate should not bias results.
3.10 Was there an intention-to-treat analysis? If not, could this bias the results? How?	Yes. Drop-outs were analyzed as if they were ongoing smokers at 12 months, biasing the result towards the null.
3.11 If a multi-site study, are results comparable for all sites?	The study included 5 sites. Results across sites are not reported.
3.12 Is the funding for the trial a potential source of bias? If yes, what measures were taken to ensure scientific integrity?	Funding is through a Leading Practice Through Research award from the Health Foundation. This does not appear to bias the results (although with foundations, the reader does not know who the behind-the-scenes funders are, as we learned with the CT scans for lung cancer screening study).
SECTION 4: EXTERNAL VALIDITY	
4.1 To which patients might the findings apply? Include patients in the study and other patients to whom the findings may be generalized.	All adult smokers
4.2 In what care settings might the findings apply, or not apply?	All primary care settings
4.3 To which clinicians or policy makers might the findings be relevant?	All primary care providers and funders who determine whether spirometry should be a covered service for smokers.
SECTION 5: REVIEW OF SECONDARY LITERATURE	
5.1 DynaMed excerpts	Previous studies, including a systematic review of 8 randomized trials, does not support use of biomarkers to improve smoking cessation rates. (Cochrane Library 2005 Issue 4:CD004705) The study reviewed here is reported and summarized in DynaMed.
5.2 DynaMed citation/access date	Tobacco use disorder -> treatment. In: Dynamed [database online]. Available at: http://dynaweb.ebscohost.com/Detail.aspx?docid=/dynamed/5a2b1fef2bfec0ee86256b05006e8ca5&sid=bca43b3b-9ada-4abb-8a91-f09f2ea30758@sessionmgr2 . Accessed April 22, 2008

5.3 UpToDate excerpts	In article on <i>Behavioral approach to smoking cessation</i> , there is no mention of lung age or spirometry as a motivational tool. In article on <i>Management of smoking cessation</i> there is also no mention.
5.4 UpToDate citation/access date	http://www.uptodateonline.com/online/content/topic.do?topicKey=pri_pulm/6326&selectedTitle=1~150&source=search_result . Accessed April 22, 2008 http://www.uptodateonline.com/online/content/topic.do?topicKey=pri_pulm/4553 . Accessed April 22, 2008.
5.5 PEPID PCP excerpts	PEPID PCP states that the likelihood of quitting increases with abnormal pulmonary function tests, but does not say if this finding is based on evidence from using abnormal pulmonary function tests in a randomized trial.
5.6 PEPID citation/access data	Addiction and Substance Abuse -> Tobacco Abuse -> Cessation of Smoking. Available at: http://www.pepidonline.com/Main.aspx . Accessed April 22, 2008.
5.7 Other excerpts (USPSTF; other guidelines; etc.)	There is no mention of spirometry as a motivational tool.
5.8 Citations for other excerpts	Counseling to prevent tobacco use. Available at: http://www.ahrq.gov/clinic/uspstf/uspstbac.htm . Accessed April 22, 2008
SECTION 6: CONCLUSIONS	
6.1 How well does the study minimize sources of internal bias and maximize internal validity? Give one number on a scale of 1 to 7 (1=extremely well; 4=neutral; 7=extremely poorly)	1
6.2 If 6.1 was coded as 4 or above, please describe the potential bias and how it could affect the study results. Specifically, what is the likely direction in which potential sources of internal bias might affect the results?	
6.3 Are the results of this study relevant to the health care needs of patients cared for by “full scope” family physicians, general internists, general pediatricians, or general ob/gyns? Are they applicable without significant change in programs or policies such as	2

the organization or financing of practice? Give one number of a scale of 1 to 7 (1=absolutely relevant; 4=neutral; 7=not at all relevant)	
6.4 Please explain your response to item 6.3.	<p>The results are definitely applicable to primary care providers in that we see a large number of adult smokers who would benefit from additional aids to quitting.</p> <p>The challenge to applicability will be getting spirometry machines in providers' offices/clinics, and having the time and skill to administer the test. Once the testing is done, lung age is calculated by the spirometry machine itself, so additional time/skill is not needed for interpretation.</p>
6.5 What is the main recommendation for change in practice, if any? Include a description of the change in practice, the indications, and the target population.	Administer spirometry to all adult smokers and report the results to them as lung age.
SECTION 7: EDITORIAL DECISIONS	
7.1 FPIN PURLs editorial decision (select one)	Pending PURL
7.2 FPIN PURLS Editor	Bernard Ewigman
7.3 Date of decision	April 24, 2008
7.4 Brief summary of decision	This well-done RCT shows that a simple intervention (communicating the patient's lung age) has a significant effect on smoking cessation rates, a relevant intervention for family physicians. The study appears to be well done. It does require having a spirometry machine in the office, and we think many family physicians do have access. The result (smoking cessation at 12 months after intervention) and effect size (NNT=14 to achieve cessation, absolute quit rates 13.6% vs. 6.4%) are impressive. This is definitely a new practice, and this is the first evaluation of this specific intervention.