Successful Tobacco Dependence Treatment in Low-Income Emergency Department Patients: A Randomized Trial

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Study objective: Tobacco use is common among emergency department (ED) patients, many of whom have low income. Our objective is to study the efficacy of an intervention incorporating motivational interviewing, nicotine replacement, and quitline referral for adult smokers in an ED.

Methods: This was a 2-arm randomized clinical trial conducted from October 2010 to December 2012 in a northeastern urban US ED with 90,000 visits per year. Eligible subjects were aged 18 years or older, smoked, and were self-pay or had Medicaid insurance. Intervention subjects received a motivational interview by a trained research assistant, 6 weeks' worth of nicotine patches and gum initiated in the ED, a faxed referral to the state smokers' quitline, a booster call, and a brochure. Control subjects received the brochure, which provided quitline information. The primary outcome was biochemically confirmed tobacco abstinence at 3 months. Secondary endpoints included quitline use.

Results: Of 778 enrolled subjects, 774 (99.5%) were alive at 3 months. The prevalence of biochemically confirmed abstinence was 12.2% (47/386) in the intervention arm versus 4.9% (19/388) in the control arm, for a difference in quit rates of 7.3% (95% confidence interval 3.2% to 11.5%). In multivariable logistic modeling controlling for age, sex, and race or ethnicity, study subjects remained more likely to be abstinent than controls (odds ratio 2.72; 95% confidence interval 1.55 to 4.75).

Conclusion: An intensive intervention improved tobacco abstinence rates in low-income ED smokers. Because approximately 20 million smokers, many of whom have low income, visit US EDs annually, these results suggest that ED-initiated treatment may be an effective technique to treat this group of smokers. [Ann Emerg Med. 2015;66:140-147.]

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INTRODUCTION

Background

Cigarette smoking remains the leading cause of preventable death and illness in the United States. In 2012, 18.1% of all US adults smoked, and 480,000 died from smoking-related illnesses.[1,2] Cessation is associated with significant individual and societal benefits.

Smokers are disproportionately from low-income households and commonly receive care in hospital emergency departments (EDs) either for medical consequences of smoking or for comorbid medical and psychiatric conditions. These patients often have limited access to primary care providers,[3,4] who tend to undertreat tobacco use.[5] Therefore, the ED visit may represent an ideal opportunity for screening, intervention, and referral for treatment, particularly given the greater prevalence of smoking in ED patients than in the general population.[6,7]

In 2010, 129.8 million individuals visited US EDs.[8] Recent reports from the Institute of Medicine,[9] the federal government,[10] and the 2008 Public Health Service tobacco treatment guideline[11] include EDs as effective loci for tobacco control. Screening followed by brief intervention and referral to treatment has had success in reducing high-risk behaviors such as problem drinking.[12]

EDs have been the focus of tobacco control efforts for 15 years. A recent meta-analysis of 7 studies containing 1,986 subjects found enhanced abstinence at 1 month, with the odds for tobacco abstinence in the intervention arm of 1.47 (95% confidence interval [CI] 1.06 to 2.06) compared with controls.[13] At subsequent points of 3, 6, and 12 months, however, the effect was nonsignificant. The interventions in

Editor's Capsule Summary

What is already known on this topic

Emergency department–based tobacco cessation programs improve abstinence rates over the short term (1 month). Unfortunately, maintenance of cessation is difficult and the optimal approach is unknown.

What question this study addressed

This single-center, 778-patient study compared 3-month abstinence in an intervention group that received counseling, nicotine replacement therapy, and a 3-prong follow-up regimen with that of a standard group that received a cessation brochure.

What this study adds to our knowledge

At 3 months, the biochemically verified abstinence rate was higher for the intervention group versus the standard group (12.2% versus 4.9%).

How this is relevant to clinical practice

A robust, multidimensional cessation model improves quit rates at 3 months; longer-term effects merit examination.

these studies included combinations of printed materials, brief counseling, motivational interviewing, and postdischarge telephone calls. Medications were not offered. An additional study found that smokers presenting to the ED with a tobacco-related *International Classification of Diseases, Ninth Revision* (*ICD-9*) code, or who thought they had a tobacco-related reason for the ED visit, were more likely to quit at 3 months than others.[14]

We hypothesized that a more potent intervention, including ED-initiated "facilitated" referral to a quitline and initiation of pharmacotherapy, might result in sustained abstinence.

Goals of This Investigation

The goal of this randomized controlled trial was to compare 2 models of brief intervention—standard care versus screening, brief intervention, and facilitated referral—to the quitline with initiation of nicotine replacement therapy. Our primary hypotheses were that (1) at 3 months, a higher proportion of subjects in the intervention arm would be abstinent than in the control arm; and (2) at 3 months, intervention-arm subjects would be smoking fewer cigarettes per day than controls. Secondary hypotheses were (1) subjects who believed their ED visit was related to tobacco use or who had a tobacco-related *ICD-9* code would be more likely to be abstinent than others; (2) the intervention would reduce overall health care service use; and (3) the intervention would be cost-effective relative to standard care. The latter 2 hypotheses will be the subject of a separate article.

MATERIALS AND METHODS

This was a single-hospital, 2-arm, randomized, controlled trial of a multicomponent intervention for adult smokers presenting to the ED, with blinded outcome assessment. The intervention consisted of a brief motivational interview, provision of 6 weeks of nicotine replacement therapy, initiation of nicotine replacement therapy in the ED, active referral to a smokers' quitline, a booster telephone call 3 days after enrollment, and provision of a smoking cessation brochure. The control arm received the brochure alone. The study was conducted at an urban teaching ED with 90,000 visits per year, located in a medically underserved community. The institutional review board approved the study. All subjects provided written informed consent.

Patients were eligible if they were aged 18 years or older, spoke English, had Medicaid or no insurance, were able to provide written informed consent, had smoked at least 100 cigarettes in their lifetime, and were currently daily or sometime smokers, averaging at least 5 cigarettes per day. Both admitted and treated and released patients were eligible. Research staff continued to follow subjects admitted to inpatient units.

Patients were excluded if they lived outside Connecticut, were too ill to provide consent, presented primarily with a psychiatric problem, were pregnant or nursing, were in police custody, had a history of allergy to nicotine replacement products, were currently in treatment for tobacco dependence, or were leaving the ED against medical advice.

An online random plan generator (http://www.randomization.com) was used to generate an allocation schedule, with an allocation ratio of 1:1 and a block size of 6. A blinded staff member prepared a set of opaque, consecutively numbered envelopes with the treatment group indicated inside.

Subjects in the usual care arm received a brochure prepared by the state Department of Public Health that provides general information about smoking cessation and the telephone number of the toll-free state smokers' quitline. They received no other study-specific treatment.

In addition to the brochure, subjects in the intervention arm received a 10- to 15-minute brief motivational interview delivered by a research assistant trained in motivational techniques.[15] Motivational interviewing