Smoking-Cessation Interventions for Urban Hospital Patients

A Randomized Comparative Effectiveness Trial

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Introduction: Hospitalization is a unique opportunity for smoking cessation, but prior interventions have measured efficacy with narrowly defined populations. The objective of this study was to enroll smokers admitted to two "safety net" hospitals and compare the effectiveness of two post-discharge cessation interventions.

Design: A randomized comparative effectiveness trial was conducted.

Setting/participants: At two New York City public hospitals, every hospitalized patient identified as a smoker (based on admission records) was approached. Inclusion criteria were: smoked cigarettes in the past 30 days; spoke English, Spanish, or Mandarin; had a U.S. phone number; not discharged to an institution where follow-up or smoking was limited; and not pregnant/breastfeeding. Of 18,797 patients identified as current smokers between July 2011 and April 2014, a total of 3,047 (16%) were discharged before being approached, 3,273 (17%) were not current smokers, 4,026 (21%) had no U.S. phone number, 2,831 (15%) were ineligible for other reasons, and 3,983 (21%) refused participation. In total, 1,618 (9%) participants enrolled in the study. During follow-up, 69% of participants were reached at 2 months and 68% at 6 months.

Intervention: At discharge, participants were randomized to multisession telephone counseling from study staff (n=804) or referral to the state quitline for proactive outreach and counseling (n=814).

Main outcome measures: Self-reported abstinence at 6 months was measured. Analyses were conducted in late 2015.

Results: One quarter of participants were homeless or in unstable housing, 60% had a history of substance abuse, 43% reported current hazardous drinking, and half had a psychiatric diagnosis other than substance abuse. At follow-up, the rate of abstinence (30-day point prevalence) was higher in the intensive counseling arm than the quitline arm at 2 months (29.0% vs 20.7%; relative risk=1.40; 95% CI=1.13, 1.73) and 6 months (37.4% vs 31.5%; relative risk=1.19; 95% CI=1.01, 1.40).

Conclusions: Intensive counseling was more effective than referral to the state quitline. Long-term abstinence was excellent in both groups. Many patients were not eligible for enrollment despite minimal exclusion criteria.

Trial Registration: This study is registered at www.clinicaltrials.gov NCT01363245.

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Introduction

Cigarette smoking is the leading preventable cause of death,[1] particularly among low-income and minority populations.[2] Although the U.S. smoking prevalence has declined from 24.1% in 1998 to 17.8% in 2013,[3] it has not declined consistently across all segments of the population. Large discrepancies in tobacco use exist by level of income and education, as well as by race and ethnicity.[3] Compared with white

smokers and smokers above the poverty line, minority and lower-income smokers are less likely to receive cessation advice from a provider, to use proven treatment, and to quit successfully.[4,5]

Hospitalization is a critical opportunity to encourage cessation and offer assistance. Patients have enforced abstinence while admitted and may be newly sensitized to health-related issues. Although initiating treatment during hospitalization and continuing for at least 1 month after discharge increases long-term cessation rates,[6] gaps exist in the literature. Most inpatient interventions have involved narrowly defined medical or surgical populations and high-intensity initiatives.[6] Psychiatric inpatient studies have focused on staff and patient attitudes and single-center experiences with institutional smoking bans—not on treatment trials.[7–13] Further, most studies have involved specially trained staff delivering intensive bedside interventions, raising questions about generalizability and feasibility.[6]

Public "safety net" hospitals provide ideal environments to address smoking cessation, as they care for populations with high smoking rates and less access to other sources of care. Their patients are more likely to be racial/ethnic minorities, non-English speaking, and poor.[14] Increasing tobacco treatment rates at public hospitals would directly address disparities in smoking by targeting populations that have higher rates of smoking and lower rates of treatment. As part of the Consortium of Hospitals Advancing Research on Tobacco (CHART),[15] this study compared the effectiveness of two post-discharge smoking-cessation interventions at two urban safety net hospitals in New York City.

Methods

Study Design, Setting, and Participants

The CHART—New York[16] study took place at Bellevue Hospital Center (part of the New York City Health and Hospitals Corporation) and the Veterans Affairs (VA) New York Harbor Healthcare System (part of the Veterans Health Administration). Both function as safety net hospitals, providing comprehensive care to predominantly low-income patients, and both are academically affiliated with New York University School of Medicine. The two study interventions—fax transfer to the state quitline versus multisession counseling delivered by study staff—were selected such that they could be readily adopted by most hospitals without difficulty. This study was approved by the IRB at each institution and by the CHART Data Safety and Monitoring Board established by NIH.

Using the electronic medical record, a daily list was generated of inpatients documented as current smokers on admission screening. Assessment of smoking status is a standard nursing practice for admitted patients and, per the team's estimation, >90% of admitted patients were assessed for smoking status. Research assistants (RAs) reviewed the list twice daily and went to the bedside of every patient on the list. Recruitment occurred 6 days per week, including evenings. In addition to the inpatient units, RAs approached admitted patients who remained in the emergency department and patients in the intensive care units.

Inclusion criteria included anyone aged ≥18 years who reported smoking during the prior 30 days; had an active U.S. phone number; and spoke English, Spanish, or Mandarin. Exclusion criteria were: (1) being pregnant or breastfeeding, (2) lacking cognitive or physical ability to participate, or (3) being discharged to an institution that would limit the ability to deliver telephone counseling and where patients lacked control over their ability to smoke (e.g., jail, nursing home). Participants were not required to be interested in quitting smoking. Upon discharge, RAs verified that participants were not discharged to an institution, then logged into the study database that generated the random assignment. The randomization scheme, designed by the biostatistician, employed a computerized random number generator and stratified participants on hospital site. The target sample size was 1,612, giving 80% power to detect a 3.5% absolute difference in abstinence rates between the two arms at the 0.05 significance level (8.5% for intensive counseling arm vs 5% for quitline arm).

Upon enrollment, participants completed a 20-minute interviewer-administered survey, which covered sociodemographic characteristics, smoking history (e.g., cigarettes per day, years smoking, prior quit attempts, other tobacco products used),[17–19] readiness to quit, alcohol use,[20,21] drug use,[22] and healthcare utilization in the past 6 months. After discharge, RAs conducted a structured explicit chart review for the hospitalization to record admission characteristics (e.g., admitting service, length of stay), diagnoses, cessation treatment received in the hospital, and nicotine-replacement therapy (NRT) prescribed at discharge.

The 2-month telephone follow-up survey was brief and included questions on smoking status, medications and counseling offered and received since discharge, and perceptions of the counseling. The 6-month telephone follow-up survey took approximately 15 minutes and included the same measures asked on enrollment, as well as questions on smoking status and treatment received. RAs making follow-up calls were blinded to treatment group assignment. For the 2-month and 6-month follow-up survey, RAs made up to ten and 20 call attempts, respectively, including evenings and weekends. RAs also checked frequently to see if participants were in the hospital or scheduled to be in clinic, in which case they administered the survey in person. After five call attempts, they also mailed paper surveys and (for Bellevue patients) sent an e-mail about the survey.

In the intensive counseling arm, the counselors logged dates and times into a database to document call attempts and duration of counseling calls. The quitline maintains records on each individual call and study staff contacted each state quitline by phone or a secure online portal to ascertain the number of calls for each participant in the quitline arm.

Interventions

Quitline arm. The project director transmitted participant information by facsimile or online referral to their state quitline, which, for 95%, was the New York State Smokers' Quitline (other

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