# Forced Smoking Cessation Is Insufficient to Promote Prolonged Abstinence

*Clarke JG, Stein LAR, Martin RA, et al. Forced smoking abstinence: not enough for smoking cessation. JAMA Intern Med 2013;173:789–94.*

## Study Overview

Objective. To examine the efficacy of the Working Inside for Smoking Elimination (WISE) intervention to decrease relapse to smoking after release from a smoke-free prison.

Design. Randomized controlled trial.

Setting and participants. The study was conducted in a large state correctional facility in the northeastern part of the United States. The facility had a campus-wide smoking ban, which prohibited use of any tobacco products on site by inmates or staff. Participants were eligible for screening if they were sentenced male or female individuals who were to be released within 8 weeks. Screened participants were eligible if they were 18 years or older, smoked ≥ 10 cigarettes per day prior to incarceration, and spoke English. The final sample included 247 participants. Participants were randomly assigned to receive the WISE intervention or to watch educational videos on health-related topics other than smoking cessation (control group). Randomization was stratified by sex, number of cigarettes smoked prior to incarceration, and post-release smoking plans.

Intervention: The WISE intervention consisted of 6 weekly sessions: sessions 1 and 6 comprised motivational interviewing (MI) and sessions 2 through 5 comprised cognitive behavioral therapy (CBT). The MI sessions focused on developing discrepancy, self-efficacy, and personal choice, whereas the CBT sessions focused on triggers to smoking and developing skills to counter these triggers. Participants also received brief telephone counseling sessions at 24 hours and 7 days after release.

Outcome measures: Prolonged abstinence was defined as having a negative urine cotinine evaluation and a self-report of no smoking in the previous 7 days. Participants were asked to complete an assessment at baseline and at 3 weeks after release. Participants who were abstinent at 3 weeks were invited to complete a 3-month assessment and urine cotinine evaluation. The assessments were conducted using audio computer-assisted self-interviewing technology. The assessment included demographics, smoking history and dependence, subjective stress, presence of smoking-related chronic diseases, depression, and receipt of drug treatment. Participants were asked whether they had an intention to remain tobacco-free after release, and were categorized as "plans to smoke after release" or "plans to not smoke after release."

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Main results. At baseline, intervention groups did not differ significantly on demographics, smoking variables, depression, or stress. Of the 247 participants, 228 (92.3%) completed the 3-week, post-release assessment. Of the 122 participants who were randomized to the WISE intervention, 83.3% completed all 6 sessions. At 3-week follow-up, 25.4% of the participants randomized to the WISE intervention were abstinent from smoking compared with the 7.2% of those in the control group ($P < 0.01$). Compared with smokers, those who were non-smokers were more likely to be Hispanic (33.3% vs. 17.6%, $P < 0.05$), have attended a substance use treatment program in prison (63.2% vs. 47.3%, $P < 0.1$), and planned to not smoke upon release (62.5% vs. 46.1%, $P < 0.1$). In multivariable logistic regression analysis, persons enrolled in the WISE intervention had sixfold greater odds of being abstinent at 3 weeks compared with the control group (adjusted odds ratio (AOR) 6.6, 95% CI 2.5–17.0). Other factors associated with 3-week abstinence included not smoking for > 6 months (AOR 4.6, 95% CI 1.7–12.4), being Hispanic (AOR 3.2, 95% CI 1.1–8.7), intention of not smoking after release (AOR 1.6, 95% CI 1.2–2.3), and receipt of in-prison drug treatment (AOR 1.9, 95% CI 0.8–4.6). Of the 40 participants who were abstinent at 3-week follow-up, 11.5% from the intervention group and 2.4% from the control group were abstinent at 3 months. In the adjusted Cox proportional hazards model, the first day after release was found to be the highest-risk day for relapse to smoking. After day 1, relapse to smoking declined sharply in the intervention group compared with the control group. The control group had 1.75 times the risk of relapsing to smoking compared to the WISE intervention group (hazard ratio 1.75, $P < 0.001$).

Conclusion. Forced smoking abstinence due to a prison smoke-free policy is insufficient to promote sustained cessation after release into the community. A behavioral intervention accompanied by the smoke-free policy prior to release may improve smoking cessation in the community.

## Commentary

There are approximately 2.3 million people incarcerated in federal, state, and local correctional systems in the United States. Individuals who experience incarceration have risk factors that lead to poor health outcomes: mental health and substance use disorders are common among this group, as is smoking [1]. The prevalence of smoking among individuals experiencing incarceration ranges between 60% and 70% [2,3]. Over the past 3 decades, correctional facilities have increasingly adopted strict smoke-free policies to reduce harms from exposure to secondhand smoke. A national survey of federal and state correctional facilities in 2007 found that approximately 60% of prisons had implemented campus-wide smoking bans (ie, no smoking in indoor or outdoor areas of the facility) [4]. The majority of these facilities did not offer smoking cessation treatment [4]. An evaluation of these policies showed that while smoke-free policies reduced exposure to secondhand smoke, they were insufficient to promote sustained smoking cessation, as the majority of individuals resumed smoking after release from a smoke-free correctional facility [5]. Moreover, inmates' lack of access to health care after release into the community poses challenges to seeking smoking cessation care in the community, and may contribute to relapse to smoking. Thus, the current study, which is directed toward preventing relapse to smoking after release, is timely and fills an important gap in the field of tobacco intervention research for vulnerable populations.

Individuals who participated in the WISE intervention had abstinence rates of 25.4% at 3 weeks and 11.5% at 3 months compared with the control group, where abstinence rates were 7.2% and 2.4%, respectively. Previous studies have highlighted the importance of a smoke-free policy in changing norms around smoking and in promoting smoking cessation [6]. Individuals in the control group who achieved abstinence may have done so because of the smoke-free policy. However, the effect of the smoke-free policy alone on sustained cessation was significantly lower than that of the policy accompanied by a behavioral intervention. These results highlight the benefits of introducing behavioral interventions for smoking cessation in correctional facilities that have implemented smoking bans. The focus of these intervention could be on improving self-efficacy to stay abstinent and to prevent triggers to smoking relapse after release into the community.

Although abstinence rates were high in the intervention group, the majority relapsed to smoking within 3 weeks of release into the community. The relapse rate was highest the day after release for both intervention and control groups. These results highlight the importance of continuing smoking cessation care while in the community to maximize efforts made toward

smoking cessation during incarceration. In 2014, the Patient Protection and Affordable Care Act (ACA) will expand Medicaid coverage to single individuals younger than 65 years of age who have incomes up to 133% of the federal poverty line. Many individuals who experience incarceration will be newly eligible for Medicaid and the smoking cessation services offered through Medicaid upon release into the community. Ensuring a seamless transition to health insurance, and appropriate discharge planning and referrals to patient-centered medical homes, may enable incarcerated individuals to receive continued treatment for smoking cessation after leaving the correctional facility.

The study had several limitations. The duration of follow-up for the intervention was short, and it is possible that the effects of the intervention could wane over time. The study was restricted to sentenced individuals, who generally have prison stays lasting 1 year or longer. Thus, the results may not be generalizable to individuals staying in jails, where average length of stay is < 3 months. As these individuals are exposed to smoke-free policies for shorter periods of time and have shorter lengths of forced abstinence, their rates of relapse may be higher than those observed in prisons. Thus, interventions may need to be more intensive and initiated at the time of entry into the facility for those with shorter stays in prisons or jails. Despite these limitations, this study is among the first to demonstrate the efficacy of a relapse prevention intervention for individuals who are about to be released into the community from a smoke-free correctional facility.

## Applications for Clinical Practice

The high rates of smoking and smoking-related morbidity and mortality among individuals who experience incarceration highlight a need for interventions to address tobacco use in this population. Most correctional facilities in the United States have implemented smoke-free policies, and these policies have been associated with reduced exposure to secondhand smoke and increased smoking cessation during incarceration. Moreover, these policies play a significant role in changing norms around smoking by making environments less permissive of smoking. However, the high rates of relapse after release into the community suggest that smoke-free policies alone are insufficient to promote sustained cessation. The results of the current study support the use of behavioral interventions in concert with smoke-free policies to prevent relapse to smoking after release from a smoke-free correctional facility. The results highlight the need for continued access to smoking cessation treatment in the community for the majority of individuals who resume smoking after release from a smoke-free correctional facility.

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