Smoking Cessation: What Is the Evidence?

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Predictors of Smoking Cessation

The two aspects of smoking cessation are attempting to quit and maintaining cessation. Nicotine dependence, as assessed by how early the first cigarette of the day is smoked and the number of cigarettes smoked per day, is a key predictor of cessation success (Hyland et al., 2004, 2006). Predictors of favorable quit attempts include low nicotine dependence (a score lower than two on the Heaviness of Smoking Index), high motivation (e.g., quit date set, strong desire to quit), longest prior attempt (longest time off smoking in previous six months), prior quit attempts made in the previous year, and higher socioeconomic status (Hyland et al., 2004, 2006). Alternatively, predictors of cessation success include low nicotine dependence, longer prior attempt, higher socioeconomic status, and not smoking in the first two weeks of cessation. Higher motivation only marginally predicted smoking cessation success, whereas a prior quit attempt was a negative predictor (Hyland et al., 2004, 2006). Some evidence exists to support a higher cessation rate in men; however, the relative benefits of gender-specific interventions are not supported (Singleton, Levin, Feldman, & Robinson, 2006). Three interventions that have shown particular success are nicotine replacement therapy (NRT), bupropion, and varenicline. NRT reduces nicotine withdrawal symptoms and increases the odds of smoking cessation 1.5–2.0-fold; individuals who consume the nicotine equivalent of 15 or more cigarettes per day benefit the most (Silagy, Lancaster, Stead, Mant, & Fowler, 2004). However, researchers found that one NRT session was no more beneficial than others and that additional counseling offered little benefit, although most studies included nonpharmacologic support (Silagy et al.).

Public Policy on Smoking

Effective interventions for smoking reduction are those that reach the most smokers. Interventions that repetitively impact smokers, including higher taxes on tobacco products, label warnings, antitobacco education campaigns, and smoke-free policies reduce tobacco demand the most (Biener et al., 2006; Frieden et al., 2005; Hammond et al., 2007). The U.S. Preventive Services Task Force’s (2003) 5-As behavioral counseling framework provides a useful five-step strategy for engaging patients in smoking cessation discussions. The 5-As are: ask about tobacco use, advise to quit through clear personalized messages, assess willingness to quit, assist to quit, and arrange follow-up and support. To decrease tobacco use worldwide, the World Health Organization (2007) ratified the Framework Convention on Tobacco Control (see Figure 1).

Effectiveness of Pharmaceutical Interventions

Nicotine- and non–nicotine-containing therapies both increase the chances of successful smoking cessation (Lam, Minnix, Robinson, & Cinciripini, 2006). Three interventions that have shown particular success are nicotine replacement therapy (NRT), bupropion, and varenicline. NRT reduces nicotine withdrawal symptoms and increases the odds of smoking cessation 1.5–2.0-fold; individuals who consume the nicotine equivalent of 15 or more cigarettes per day benefit the most (Silagy, Lancaster, Stead, Mant, & Fowler, 2004). However, researchers found that one NRT session was no more beneficial than others and that additional counseling offered little benefit, although most studies included nonpharmacologic support (Silagy et al.).
Bupropion, a selective serotonin/norepinephrine uptake inhibitor, doubles the odds of smoking cessation at six months (Silagy et al., 2004). Possible nonresearch-supported mechanisms include improving depression symptoms precipitated by smoking cessation, substituting for the antidepressant effects of nicotine, and independent neurogenic effects, (e.g., acting as a nicotine receptor antagonist). In one comparative trial, bupropion was as effective as NRT (Wu, Wilson, Dimoulas, & Mills, 2006). In combination with NRT, predictive factors for continued cessation included no history of chronic obstructive pulmonary disease, effectively quitting following the first week of therapy, and a lower value for mid-ranged expiratory flow for individuals with chronic obstructive pulmonary disease (forced expiratory flow: 25–75) (Sampablo, Lores, Coll-Klein, Jimenez, & Rebasa, 2003).

Varenicline, a partial nicotine receptor agonist, increased smoking cessation threefold at one year when compared with a placebo (Cahill, Stead, & Lancaster, 2007; Jorenby et al., 2006). An initial trial suggested that bupropion may be less efficacious than varenicline; however, the trial was funded by varenicline’s manufacturer (Cahill et al.). A paucity of research directly compares varenicline with NRT. In the one study identified, cigarette cravings were less severe with varenicline than NRT (Stapleton et al., 2008). Nortriptyline and clonidine also are effective therapies, but side effects including sedation, constipation, urinary retention, and arrhythmia for nortriptyline and dry mouth and sedation for clonidine have limited their use (Gourlay, Stead, & Benowitz, 2004; Hughes, Stead, & Lancaster, 2005).

Effectiveness of Nonpharmacologic Treatments

Self-help materials and brief professional advice increase the chances of smoking cessation 1.5–1.7-fold, respectively, when compared to no intervention (Lancaster & Stead, 2005). Individual, group, and telephone counseling are effective at the individual level for smokers willing to commit. When used in combination with NRT, counseling offers a lower relative benefit, but the absolute benefit may be similar with and without NRT (Aveyard et al., 2007; Gorin & Heck, 2004; Lancaster & Stead; Rice & Stead, 2004; Soria, Legido, Escolano, Lopez Yeste, & Montoya, 2006; Williams et al., 2006). Web- and computer-based programs may offer some benefit, but more research is needed (Etter, 2005; Walters, Wright, & Shegog, 2006). Exercise reduces symptoms of withdrawal (Kawachi, Troisi, Rotnitzky, Coakley, & Colditz, 1996; Ussher, 2005); however, no substantial evidence shows that biofeedback, hypnosis, or acupuncture offers smoking cessation benefits (Abbot, Stead, White, & Barnes, 2000; Bize, Burnand, Mueller, & Cornuz, 2005; White, Moody, & Campbell, 2007; White, Rampes, & Campbell, 2006).

Effective Training of Healthcare Professionals

Training healthcare professionals and offering financial incentives to promote smoking cessation increase the availability of smoking interventions for patients (Lancaster & Stead, 2005). In addition, quit rates increased when smoking cessation tool kits were made available to healthcare professionals (Dickey, Gemson, & Carney, 1999) (see Figure 2). Each November, the American Cancer Society (2008) sponsors the Great American Smoke Out® as a time to renew efforts related to smoking cessation. In 2008, the Great American Smoke Out is scheduled for November 20 to encourage smokers to quit for a day in hopes that they will quit for good. Professionals can access employer tool kits, downloadable files, and printed materials from the Great American Smoke Out Web site and other resources for assistance with smoking cessation tips (see Figure 3).

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References


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