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Treating smokers in the health care setting

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Abstract

A 45 year-old overweight woman with a history of asthma and depression presents to her primary care physician with her third episode of acute bronchitis in the last 24 months. She began smoking at age 15 and now smokes 10 to 15 cigarettes per day, but every day she starts smoking immediately upon awakening, an indication of severe nicotine dependence¹. She has made multiple unsuccessful attempts to quit, once briefly using the nicotine patch, but relapsed due to strong urges to smoke and weight gain. She has not used cessation counseling or other medications. She is bothered by the cost of cigarettes, and is worried about smoking's health effects on her two children and on herself. Importantly, she is reluctant to make a quit attempt now, in part, because she fears she won't succeed. What would you advise?

The Clinical Problem

The prevalence of smoking has declined dramatically in America over the last half century, falling from about 42% in the 1960s to about 20% today². However, this decline has stalled recently, and higher prevalence rates are concentrated in certain populations: those with low incomes, low educational attainment, psychiatric conditions, and certain ethnic groups such as Native Americans. Fortunately, most evidence shows that individuals in these populations are aided by the same treatments that are effective in other smokers³.

Smokers today tend to smoke fewer cigarettes than in the past⁴. However, smoking fewer cigarettes does not necessarily translate into reduced harms; biochemical indices of smoking intensity have not shown commensurate declines⁵. Thus, even those who reduce their smoking significantly (e.g., by 50% from 15 cpd or more: ⁵), experience rates of myocardial infarction and COPD⁵ closer to those of heavy smokers than quitters. Over 30% of cases of cancer, 90% of COPD, and 30% of cardiovascular morbidity in the US is attributed to tobacco use⁶. Tobacco use also delays wound healing, alters clearance rates of drugs⁷ (e.g., beta blockers, psychiatric drugs), and reduces cancer treatment effectiveness.

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Tobacco use remains the chief avoidable cause of death in America, directly responsible for about 1/5 of all deaths in the US. In addition, smoking results in approximately \$100 billion in added healthcare costs and another \$97 billion in lost productivity⁸ in the United States each year. Smokers incur \$1,600 more in annual healthcare costs per person than do non-smokers⁹, and smoking is a prime driver of healthcare expenditures for low income and other disadvantaged individuals¹⁰.

Nicotine Addiction and Its Clinical Challenges

Nicotine is carried by tar particles to the alveoli of the lungs and then to the brain – a process that takes approximately 10 seconds for each inhalation¹¹. Nicotine binds to nicotinic cholinergic receptors in the brain, leading to neurotransmitter release¹², which makes smoking and smoking cues (e.g., the sight of cigarettes) more attractive and powerfully reinforcing¹². In addition, tolerance or neuroadaptation occurs with chronic smoking, resulting in proliferation of nicotinic receptors, permitting heavier levels of self-administration. Nonoccupancy of these receptors due to decreased smoking results in withdrawal symptoms such as craving, negative moods, and restlessness, which spur a return to smoking¹³. About half of phenotypic variance in tobacco dependence is attributable to genetic influence¹⁴.

There are multiple challenges to the clinical treatment of tobacco dependence. Many clinicians do not consistently offer cessation treatments to their patients who smoke¹⁵, only about 20% of smokers are ready to make a quit attempt at any point in time¹⁶, and smokers too infrequently use evidence based treatments. Consequently, about 95% of unaided quit attempts end in failure¹⁷. Finally, non-adherence to medications and counseling is common and reduces cessation success^{18,19}. Patients typically take only about 50% of their recommended medication doses¹⁸, and often complete less than half of scheduled counseling sessions¹⁹.

Treatment Strategies and Evidence

Identifying Smokers in the Healthcare Setting

Approximately 70% of smokers in the US see a primary care physician each year²⁰, providing good opportunity to deliver effective cessation interventions. Including tobacco use as one of the vital signs results in identification of 80% or more of smokers visiting clinics²¹.

Motivating the Unwilling Patient

Many smokers lack the motivation to make a quit attempt, but several interventions have been shown to increase quit attempts and successful quitting in previously unmotivated patients. One such intervention is motivational interviewing, in which the clinician uses nonconfrontational counseling to resolve the patient's ambivalence about quitting by encouraging choices consistent with the patients' important long-term goals^{22,23} (see Table 1). A meta-analysis of 14 RCT's²³ showed that in comparison with brief advice or usual care, motivational interviewing increased 6-month cessation rates by about 30%. Two of these studies used primary care physicians as counselors and across these studies about 8%

of previously unwilling smokers achieved long-term cessation in the motivational interviewing condition, while only about 2% quit in the control conditions²³. Clinicians in these studies typically received 2 hours or more of training in this technique. In addition, across the 14 studies there was a relation between counseling intensity and outcome, with patients doing better if they received 2 or more sessions (vs. 1), and if the sessions lasted more than 20 minutes. The 2008 PHS Guideline³ used motivational interviewing components to construct an abbreviated clinical motivational intervention that can be used when time or training needs do not permit motivational interviewing. This “5 Rs” counseling focuses on personally *Relevant* reasons to quit, *Risks* of continued smoking, *Rewards* for quitting, *Roadblocks* to successful quitting, with *Repetition* of the counseling at subsequent clinic visits. Such counseling was shown in one randomized controlled trial²⁴ to increase 6-month quit rates when paired with a later offer of nicotine replacement therapy (NRT) (24% of those getting the 5-R’s had quit, vs. 4% of the no-treatment controls).

Another approach is to encourage and instruct unwilling smokers to substantially and persistently reduce their daily smoking (“as much as possible”²⁵), while using NRT (Table 3)^{25–27}. A meta-analysis of 7 placebo controlled trials (Total N = 2767) examined the effects of patients using NRT (nicotine gum, inhaler, or patch) for 6 months or more while trying to reduce their smoking²⁷. This, “Smoking Reduction+NRT” treatment almost doubled patients’ abstinence rates vs. placebo (10 vs. 5%) in patients previously unwilling to quit. A similarly strong finding was obtained in a recent study²⁸ of 1,154 “unwilling” smokers who used either nicotine gum or patches for only 2 months; at 6-month follow-up 17% were abstinent in the NRT group, but only 10% in the control group. About a quarter or so of non-quitters reduce their smoking by 50% or more in such treatments^{25,27}. Importantly, patients using NRT while smoking report about the same level of adverse events as patients using placebo²⁷.

In addition to the treatments described above, research shows that making treatment easily available and reducing barriers also increase treatment acceptance. For instance, when treatment is delayed and occurs at a separate location, only 10% or fewer of patients enter it²⁹, while as many as a third of patients will enter treatment if it is readily accessible³⁰. Treatment entry may also be enhanced by offers to help that are repeated over time³¹; about a quarter of smokers change their intention to quit over just 30 days³¹.

The Willing Patient: Evidence-based Treatments

Extensive research^{3,23,32–35} supports the effectiveness of counseling and pharmacologic interventions, alone or in combination, for increasing smoking cessation rates amongst patients willing to make a quit attempt.

Counseling

There is a consistent relation between counseling intensity and abstinence. One meta-analysis of some 35 randomized controlled trials³ shows that when patients received no counseling, only about 11% quit smoking successfully for 6 months or more. However, 6-month abstinence increased significantly with minutes of total counseling contact (which may have occurred across multiple sessions): about 14% for 1–3 min of counseling, 19% for

4–30 min of counseling, and 27% for 31–90 min of counseling. (Some studies supplied pharmacotherapy across all counseling conditions, so medication contributed to overall success rates³). Successful counseling boosts motivation to quit by personalizing the costs and risks of the patient's tobacco use: e.g., tying it to the patient's health, economic, and family situation. Counseling also warns of obstacles or hurdles to quitting, and encourages the patient to plan and use coping strategies to avoid and resist temptations or urges (Table 1). The clinician should assess and counsel regarding factors that pose especially great challenges to quitting³, such as living with a smoker, excessive alcohol use, and fear of gaining weight (Table 2)³⁶. Counseling should be empathic and supportive, not confrontational³. Counseling remains underutilized despite its efficacy, and a key goal is to incorporate its use in practice—either in-person or via referral to a telephone quitline (1-800-QUIT NOW).

Medications

There are seven FDA-approved medications for smoking cessation (Table 2). While all FDA approved medications have been shown in randomized trials to be more effective than placebo, two are especially effective: a) varenicline and b) combination NRT (the nicotine patch with an acute form of nicotine therapy such as the nicotine gum, lozenge, inhaler or spray). A meta-analysis³ of 83 randomized clinical trials examined the effectiveness of cessation medications in producing abstinence at 6-months following treatment; most cessation medications (e.g., the nicotine patch, gum, lozenge, nasal spray, inhaler, and bupropion) approximately doubled the odds of a patient achieving abstinence (used as per guidance in Table 2). The estimated 6-month abstinence rate amongst patients getting placebo was about 14%, versus 19–26% across most pharmacotherapies (some studies had counseling in all study conditions, so these effectiveness rates reflect some counseling benefit). However, varenicline and combination NRT produced estimated abstinence rates of 33 and 37%, respectively³, rates that were significantly higher than a representative monotherapy such as the nicotine patch. Because both combination NRT and varenicline produce higher abstinence rates than other pharmacotherapies^{3,37}, clinicians should encourage their use. Importantly, cessation medications are effective in clinical use in real world healthcare settings and with a wide variety of smokers (e.g., in those with substance abuse and depression diagnoses)^{3,19}.

In addition, two pharmacotherapy strategies show promise and merit further research. One is the $\alpha 4\beta 2$ nicotinic receptor partial agonist, varenicline, which tripled cessation success at 12 months post-treatment in a recent randomized clinical trial³⁸. Second, is use of the nicotine patch for 2 or more weeks *prior to the quit day* (Table 3)^{39,40}. Six extant randomized clinical trials suggest that it may increase 6-month abstinence rates about 25% over those obtained without prequit patch use⁴⁰, but effects have been variable⁴⁰.

Increasing Patient Adherence

Many smokers will not engage in counseling, especially if it is lengthy or requires multiple contacts (e.g., ⁴¹). Therefore, the patient should be offered options for quitting, including brief and accessible counseling. Nonadherence to cessation medications is also common and is linked with beliefs that they are dangerous, ineffective, and should not be used if a person

has lapsed⁴². Because medication nonadherence is related to cessation failure¹⁸ the clinician should discuss with the patient the safety and effectiveness of cessation medications and encourage their adherent use.

Successful Smoking Cessation: Clinical Steps

After identifying a patient as a smoker, the patient's willingness to try to quit should guide the quit attempt plan. Figures 1 and 2 present treatment flow-diagrams for patients willing and unwilling to make a quit attempt at the time of the clinic visit. Of course, some patients will start smoking during a cessation attempt. When should the clinician abandon treatment? Perhaps only half of smokers who lapse go on to fully relapse (e.g., ⁴³), therefore clinicians should encourage the patient to keep trying to quit as long as the patient is willing. If the patient wants to abandon the quit attempt, the clinician should encourage the patient to smoke as little as possible given data linking reduced smoking to later successful quitting²⁴.

The HealthCare System

The consistent, effective delivery of tobacco cessation intervention requires support from the healthcare system. For instance, research shows that smokers are significantly more likely to make a quit attempt if tobacco treatment is a covered benefit in health insurance packages⁴⁴. Because of the health and cost benefits of cessation, more insurance plans now cover evidence-based cessation treatments (e.g., in 2010 Medicare expanded its coverage to all smokers, not just those with smoking related disease, extending coverage for cessation counseling to 4 million individuals⁴⁵). In addition, electronic health records (EHRs) can prompt the physician and clinic staff to systematically identify and treat smokers⁴⁶. Clinician training and performance feedback, dedicated staff to deliver smoking cessation treatments, and Fax-to-Quit programs that link patients with tobacco cessation quitlines nationwide (1-800-QUIT NOW) ⁴⁷ also increase successful tobacco cessation.

Areas of Uncertainty

More research is needed to identify effective strategies to increase patient acceptance and use of counseling and pharmacotherapy and to identify optimal combinations of treatments (both during and prior to quitting). Further, more research is needed on how to prevent relapse amongst newly abstinent patients and how best to integrate new technologies (telephone quitlines, internet-based treatments) into comprehensive tobacco dependence treatments.

Guidelines

The United States Public Health Service (PHS) clinical practice guideline, *Treating Tobacco Use and Dependence*³, was comprehensively updated in 2008 and provides evidence-based guidance for clinicians and health systems treating patients who use tobacco. In general, the recommendations made in the present article are consistent with the PHS Guideline recommendations and with other corroborating analyses (e.g. ^{33,48}). However, new data have led to some changes; e.g., that smokers unwilling to make a quit attempt be encouraged

to use NRT medication to motivate and prepare them for a quit attempt (see Table 1), and a greater emphasis on treatment adherence.

Conclusions and Recommendations

At all healthcare visits, smokers such as the woman described in the vignette should be encouraged to quit and queried about their willingness to make a quit attempt. Because she was initially unwilling to try to quit, either Motivational Interviewing (Table 1) or the “5 Rs” should be used at each visit. There is more evidence supporting the use of the former, but it is more time consuming and requires greater training. In addition, patients who are willing to try to reduce their smoking should be encouraged to use the Smoking Reduction +NRT treatment (Table 1) with the understanding that this treatment should be used for at least several months.

After using the Smoking Reduction+NRT treatment for three months, the patient was willing to make a quit smoking attempt at a subsequent visit. In addition to providing practical advice on quitting on such a visit (Table 1), the clinician should encourage adjuvant counseling through a State quitline (1-800-QUIT NOW) and an on-line resource such as www.smokefree.gov or www.women.smokefree.gov. The clinician should also discuss the pros and cons of various medications and educate the patient regarding beliefs that smoking cessation medications are as harmful or addictive as smoking. After discussing the two most effective medication options (varenicline or combination NRT) with regard to effectiveness, contraindications, side effects, and costs, combination NRT (the nicotine patch and lozenge) was recommended because this treatment has been shown to be highly effective, the patient had already achieved some success using NRT as part of the Smoking Reduction+NRT intervention, and NRT has been shown to be safe and effective in persons with depressive symptoms⁴⁸ and in persons with high levels of nicotine dependence (e.g., smoking within 5 minutes of awakening⁴⁹). Counseling dispelled medication myths, stressed the importance of adherent use, and stressed that the patient should first focus on cessation rather than on weight control--noting that a healthy diet and exercise could aid both weight and cessation. She also received an information sheet listing situations that pose a risk to smoking cessation, possible coping responses, and resource information to help prevent relapse (e.g., *Forever Free* at <http://www.smokefree.gov/pdf.html>). Finally, a follow-up visit was scheduled about two weeks after the quit day; during which we reviewed cessation challenges and provided praise and support regarding the patient's success. This was repeated at later visits and six months later, the patient remained tobacco free.

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References

1. Baker TB, Piper ME, McCarthy DE, et al. Time to first cigarette in the morning as an index of ability to quit smoking: implications for nicotine dependence. *Nicotine Tob Res.* 2007; 9(Suppl 4):S555–70. [PubMed: 18067032]
2. U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Health Statistics. *Health, United States, 2009.* 2010 DHHS Publication No. 2010–1232.
3. Fiore, MC.; Jaen, CR.; Baker, TB., et al. *Treating tobacco use and dependence: 2008 update.* Rockville, MD: U.S. Department of Health and Human Services, U.S. Public Health Service; 2008.
4. Centers for Disease Control and Prevention. National Health and Nutrition Examination Survey 2007–2008. 2008. <http://www.cdc.gov/nchs/nhanes.htm>
5. Godtfredsen NS, Vestbo J, Osler M, Prescott E. Risk of hospital admission for COPD following smoking cessation and reduction: A Danish population study. *Thorax.* 2002; 57:967–72. [PubMed: 12403880]
6. Fiel SB. Chronic obstructive pulmonary disease. Mortality and mortality reduction Drugs. 1996; 52(Suppl 2):55–60. discussion 60–51.
7. Zevin S, Benowitz NL. Drug interactions with tobacco smoking. An update. *Clin Pharmacokinet.* 1999; 36:425–38. [PubMed: 10427467]
8. [Accessed Jan 11, 2011] Toll of tobacco in the United States of America. 2010. at <http://www.tobaccofreekids.org/research/factsheets/pdf/0072.pdf>
9. Centers for Disease Control and Prevention. Annual smoking-attributable mortality, years of potential life lost, and economic costs – United States, 1995–1999. *MMWR.* 2002; 51:300–3. [PubMed: 12002168]
10. Armour BS, Finkelstein EA, Fiebelkorn IC. State-level Medicaid expenditures attributable to smoking. *Prev Chronic Dis.* 2009; 6:A84. [PubMed: 19527585]
11. Russell MA, Feyerabend C, Cole PV. Plasma nicotine levels after cigarette smoking and chewing nicotine gum. *Br Med J.* 1976; 1:1043–6. [PubMed: 1268547]
12. Benowitz NL. Nicotine addiction. *N Engl J Med.* 2010; 362:2295–303. [PubMed: 20554984]
13. Baker TB, Piper ME, McCarthy DE, Majeskie MR, Fiore MC. Addiction motivation reformulated: An affective processing model of negative reinforcement. *Psychol Rev.* 2004; 111:33–51. [PubMed: 14756584]
14. Lessov-Schlaggar CN, Pergadia ML, Khroyan TV, Swan GE. Genetics of nicotine dependence and pharmacotherapy. *Biochem Pharmacol.* 2008; 75:178–95. [PubMed: 17888884]
15. Shiffman S, Brockwell SE, Pillitteri JL, Gitchell JG. Use of smoking-cessation treatments in the United States. *Am J Prev Med.* 2008; 34:102–11. [PubMed: 18201639]
16. Cancer trends progress report - 2009/2010 update. National Cancer Institute; at <http://progressreport.cancer.gov/> [Accessed Jan 12, 2011]
17. Novotny, TE.; Cohen, JC.; Yurekli, A.; Sweanor, DT.; de Beyer, J. Smoking cessation and nicotine replacement therapies. In: Jha, P.; Chaloupka, F., editors. *Tobacco control in developing countries.* New York: Oxford University Press; 2000.
18. Shiffman S, Sweeney CT, Ferguson SG, Sembower MA, Gitchell JG. Relationship between adherence to daily nicotine patch use and treatment efficacy: secondary analysis of a 10-week randomized, double-blind, placebo-controlled clinical trial simulating over-the-counter use in adult smokers. *Clin Ther.* 2008; 30:1852–8. [PubMed: 19014840]
19. Smith SS, McCarthy DE, Japuntich SJ, et al. Comparative effectiveness of 5 smoking cessation pharmacotherapies in primary care clinics. *Arch Intern Med.* 2009; 169:2148–55. [PubMed: 20008701]
20. Centers for Disease Control and Prevention. Physician and other health-care professional counseling of smokers to quit – United States, 1991. *MMWR Morb Mortal Wkly Rep.* 1993; 42:854–7. [PubMed: 8232167]

21. Fiore MC, Jorenby DE, Schensky AE, Smith SS, Bauer RR, Baker TB. Smoking status as the new vital sign: effect on assessment and intervention in patients who smoke. *Mayo Clin Proc.* 1995; 70:209–13. [PubMed: 7861807]
22. Hettema J, Steele J, Miller WR. Motivational interviewing. *Annu Rev Clin Psychol.* 2005; 1:91–111. [PubMed: 17716083]
23. Lai DT, Cahill K, Qin Y, Tang JL. Motivational interviewing for smoking cessation. *Cochrane Database Syst Rev.* 2010:CD006936. [PubMed: 20091612]
24. Carpenter MJ, Hughes JR, Solomon LJ, Callas PW. Both smoking reduction with nicotine replacement therapy and motivational advice increase future cessation among smokers unmotivated to quit. *J Consult Clin Psychol.* 2004; 72:371–81. [PubMed: 15279521]
25. Wennike P, Danielsson T, Landfeldt B, Westin A, Tonnesen P. Smoking reduction promotes smoking cessation: results from a double blind, randomized, placebo-controlled trial of nicotine gum with 2-year follow-up. *Addiction.* 2003; 98:1395–402. [PubMed: 14519176]
26. Hughes JR, Carpenter MJ. The feasibility of smoking reduction: an update. *Addiction.* 2005; 100:1074–89. [PubMed: 16042638]
27. Moore D, Aveyard P, Connock M, Wang D, Fry-Smith A, Barton P. Effectiveness and safety of nicotine replacement therapy assisted reduction to stop smoking: systematic review and meta-analysis. *BMJ.* 2009; 338:b1024. [PubMed: 19342408]
28. Chan SS, Leung DY, Abdullah AS, Wong VT, Hedley AJ, Lam TH. A randomized controlled trial of a smoking reduction plus nicotine replacement therapy intervention for smokers not willing to quit smoking. *Addiction.* 2011; 106:1155–63. [PubMed: 21226883]
29. Lichtenstein E, Hollis J. Patient referral to a smoking cessation program: Who follows through? *J Fam Pract.* 1992; 34:739–44. [PubMed: 1593248]
30. Fiore MC, McCarthy DE, Jackson TC, et al. Integrating smoking cessation treatment into primary care: An effectiveness study. *Prev Med.* 2004; 38:412–20. [PubMed: 15020174]
31. Hughes JR, Keely JP, Fagerstrom KO, Callas PW. Intentions to quit smoking change over short periods of time. *Addict Behav.* 2005; 30:653–62. [PubMed: 15833571]
32. Lancaster T, Stead LF. Individual behavioural counselling for smoking cessation. *Cochrane Database Syst Rev.* 2005:CD001292. [PubMed: 15846616]
33. Stead LF, Perera R, Bullen C, Mant D, Lancaster T. Nicotine replacement therapy for smoking cessation. *Cochrane Database Syst Rev.* 2008:CD000146. [PubMed: 18253970]
34. Cahill K, Stead L, Lancaster T. Nicotine receptor partial agonists for smoking cessation. *Cochrane Database Syst Rev.* 2007:CD006103. [PubMed: 17253581]
35. Hughes, Stead L, Lancaster T. Antidepressants for smoking cessation. *Cochrane Database Syst Rev.* 2007:CD000031. [PubMed: 17253443]
36. Bolt DM, Piper ME, McCarthy DE, et al. The Wisconsin Predicting Patients' Relapse questionnaire. *Nicotine Tob Res.* 2009; 11:481–92. [PubMed: 19372573]
37. Piper ME, Smith SS, Schlam TR, et al. A randomized placebo-controlled clinical trial of 5 smoking cessation pharmacotherapies. *Arch Gen Psychiatry.* 2009; 66:1253–62. [PubMed: 19884613]
38. West R, Witold Zatonski W, Cedzynska M, et al. Randomised placebo-controlled trial of cytidine: a low-cost selective alpha-4 beta-2 partial agonist with global potential for smoking cessation. *New Engl J Med.* in press.
39. Rose JE. New findings on nicotine addiction and treatment. *Nebr Symp Motiv.* 2009; 55:131–41. [PubMed: 19013942]
40. Lindson N, Aveyard P. An updated meta-analysis of nicotine preloading for smoking cessation: investigating mediators of the effect. *Psychopharmacology (Berl).* 2010
41. Hjalmarson A, Boethius G. The effectiveness of brief advice and extended smoking cessation counseling programs when implemented routinely in hospitals. *Prev Med.* 2007; 45:202–7. [PubMed: 17643480]
42. Vogt F, Hall S, Marteau TM. Understanding why smokers do not want to use nicotine dependence medications to stop smoking: qualitative and quantitative studies. *Nicotine Tob Res.* 2008; 10:1405–13. [PubMed: 18686189]

43. Japuntich SJ, Piper ME, Leventhal AM, Bolt DM, Baker TB. The effect of five smoking cessation pharmacotherapies on smoking cessation milestones. *J Consult Clin Psychol*. 2011; 79:34–42. [PubMed: 21261432]
44. Curry SJ, Grothaus LC, McAfee T, Pabiniak C. Use and cost effectiveness of smoking-cessation services under four insurance plans in a health maintenance organization. *N Engl J Med*. 1998; 339:673–9. [PubMed: 9725926]
45. U.S. Department of Health and Human Services. [Accessed July 6, 2011] Smoking cessation. 2010. <http://www.medicare.gov/navigation/manage-your-health/preventive-services/smoking-cessation.aspx?AspxAutoDetectCookieSupport=1>
46. Lindholm C, Adsit R, Bain P, et al. A demonstration project for using the electronic health record to identify and treat tobacco users. *WMJ*. 2010; 109:335–40. [PubMed: 21287886]
47. Kobinsky KH, Redmond LA, Smith SS, Yepassis-Zembrou PL, Fiore MC. The Wisconsin Tobacco Quit Line's Fax to Quit program: participant satisfaction and effectiveness. *WMJ*. 2010; 109:79–84. [PubMed: 20443326]
48. Hughes JR. How confident should we be that smoking cessation treatments work? *Addiction*. 2009; 104:1637–40. [PubMed: 19681807]
49. Kinnunen T, Korhonen T, Garvey AJ. Role of nicotine gum and pretreatment depressive symptoms in smoking cessation: twelve-month results of a randomized placebo controlled trial. *Int J Psychiatry Med*. 2008; 38:373–89. [PubMed: 19069579]
50. Loh W-Y, Piper ME, Schlam TR, et al. Should all smokers use combination smoking cessation pharmacotherapy? Using novel analytic methods to detect differential treatment effects over 8 weeks of pharmacotherapy. *Nicotine Tob Res*. in press.

Figure 1.

5As* Clinical Intervention for Patients *Willing* to Initiate a Quit Attempt During Clinic Visit

*From the 2008 PHS Clinical Practice Guideline³: The 5As: ASK about tobacco use, ADVISE to quit, ASSESS willingness to make a quit attempt, ASSIST in quit attempt, ARRANGE for follow-up.

Figure 2.
Clinical Interventions for Patients *Unwilling* to Initiate a Quit Attempt during the Clinic Visit

Table 1

Counseling Treatment Recommendations Based on Willingness to Make a Quit Attempt*

For the Smoker Willing to Make a Quit Attempt Now		For the Smoker Unwilling to Make a Quit Attempt at this Time
Offer Support	<p>Provide: Empathic and supportive environment while encouraging the patient in the quit attempt: “My office staff and I are here to help you quit.” “I’m recommending treatments that can help you succeed.”</p> <p>Have Patient: Set a Quit Date: ideally within 2 – 3 weeks Tell Others and Ask for Support:</p> <ul style="list-style-type: none"> E.g., not to smoke around patient <p>Anticipate and Plan for Challenges and Temptations</p> <ul style="list-style-type: none"> Discuss how the patient can overcome future challenges; when they will occur, what they will be, and how to avoid or cope Challenges: stress, alcohol, other smokers, weight gain Coping plan: avoid alcohol and other smokers, stress healthy eating and an active lifestyle <p>Remove all Tobacco Products – patient should remove tobacco from home, car, and work environments Stress Abstinence: Urge total abstinence starting on the quit date, but stress sticking with treatment despite lapsing</p>	<p>Express Empathy: Respond so that the patient feels heard and understood, and that you care about his or her views and wishes: e.g.,</p> <ul style="list-style-type: none"> Open-ended questions: “What might happen if you quit?” Reflective listening to communicate understanding: “I hear that you are worried about weight gain and about not being successful in quitting.” Normalize the patient’s feelings and concerns: “Most smokers, like you, have tried several times before they quit successfully.” Support the patient’s autonomy: “I hear that you are not ready to quit. Just let me know when you would like to try and I will help.” <p>Develop Discrepancy: Accept the patient’s ambivalence about quitting, but support the patient’s strongly held values and goals that are inconsistent with smoking: e.g.,</p> <ul style="list-style-type: none"> Highlight how current behavior is discrepant with important values and goals: “So, you are strongly committed to your kids, and you worry that your smoking isn’t the best thing for them.” Support the patient’s “change talk”: “Yes, I think you are right that it helps to plan ahead for a quit attempt.” Strengthen the patient’s values that conflict with smoking: “I am impressed with your strong desire not to feel like an addict—to be free from smoking.” <p>Roll with Resistance: Be open to your patient’s ambivalence, resistance, and reasons not to make a quit attempt.</p> <ul style="list-style-type: none"> Back-off when a patient expresses resistance: “You are tired of people trying to get you to quit—I can understand that.” Let your patient know that you hear and respect misgivings: “Because medication did not help you before, you think a different medication won’t help you now.” Ask permission to help: “May I tell you what I think will help you quit?” <p>Support Self-Efficacy: Support the patient’s belief that she or he can quit.</p> <ul style="list-style-type: none"> Build on past successes: “You were able to stop smoking for a couple of weeks the last time you tried—that means that you really have the skills to fight urges and resist temptation.” Give patient choices and control over how to proceed: “Which of these treatments sounds good to you?”
Provide Brief Cessation Counseling (STARS)	<p>Recommend Medication:</p> <ul style="list-style-type: none"> Note effectiveness Discuss patient concerns <p>Discuss Options:</p> <ul style="list-style-type: none"> Recommend a medication based on effectiveness, patient preferences, cost, contraindications Encourage use of varenicline or combination NRT Consider optional precessation medication use (Table 3) <p>Encourage Adherent Use Address Myths about Addictiveness and Harm</p>	
Medication Counseling		
Provide supplemental materials and information	<p>Available Resources: offer supplemental materials and information:</p>	<p>Inform Patient:</p> <ul style="list-style-type: none"> “There is a treatment that may help you reduce your smoking.”

For the Smoker Willing to Make a Quit Attempt Now		For the Smoker Unwilling to Make a Quit Attempt at this Time
	<ul style="list-style-type: none">• 1-800-QUIT-NOW – Telephonic quitting counseling• www.smokefree.gov – online quitting support• www.women.smokefree.gov – online quitting support for women• Forever Free relapse prevention booklets (available online at http://www.smokefree.gov/resources.aspx by selecting <i>Forever Free</i>)	Deliver a Smoking Reduction + NRT Treatment for Those Willing to Try It: <ul style="list-style-type: none">• Consider NRT use for 1–6 months (Table 3)• Help formulate a smoking reduction plan<ul style="list-style-type: none">– Reduce daily smoking as much as possible– Cut out smoking entirely in key contexts and activities (e.g., in car, watching TV).

* Adapted, in part, from the 2008 PHS Guideline³

Table 2

Cessation Medication Treatment Recommendations*

Medication	Dosage	Use Instructions	Cautions/Warnings	Side Effects	Availability
<i>Bupropion SR</i>	<ul style="list-style-type: none"> Days 1–3: 150 mg each morning Day 4-end: 150 mg twice daily 	<ul style="list-style-type: none"> Start 1–2 wks before quit date Use 2 to 6 months 	Do not use with: <ul style="list-style-type: none"> Monoamine oxidase (MAO) inhibitors Bupropion in any other form A history of seizures A history of eating disorders See FDA Boxed Warning on serious mental health events: http://www.fda.gov/NewsEvents/Newsroom/PressAnnouncements/ucm170100.htm	<ul style="list-style-type: none"> Insomnia Dry mouth Vivid or abnormal dreams 	Rx Only: <ul style="list-style-type: none"> Generic/other Zyban Wellbutrin SR
<i>Nicotine Gum</i>	<ul style="list-style-type: none"> 1 piece every 1 to 2 hours initially, then taper Up to 24 pieces/day If smokes 24 cigs/day: 2 mg If smokes 25 cigs/day: 4 mg 	<ul style="list-style-type: none"> Use up to 12 weeks 	<ul style="list-style-type: none"> Caution with dentures Do not eat or drink 15 minutes before or during use 	<ul style="list-style-type: none"> Mouth soreness Heartburn 	OTC Only: <ul style="list-style-type: none"> Generic/other Nicorette
<i>Nicotine Inhaler</i>	<ul style="list-style-type: none"> 6–16 cartridges/day Inhale 80 times/cartridge 	<ul style="list-style-type: none"> Use up to 6 months Taper at end 	<ul style="list-style-type: none"> May irritate mouth/throat 	<ul style="list-style-type: none"> Mouth/throat irritation 	RX Only: <ul style="list-style-type: none"> Nicotrol Inhaler
<i>Nicotine Lozenge</i>	<ul style="list-style-type: none"> 1 piece every 1 to 2 hours initially, then taper If smokes 30 min post waking: 2mg If smokes < 30 min post waking: 4mg 	<ul style="list-style-type: none"> Use 3–6 months 	<ul style="list-style-type: none"> Do not eat or drink 15 minutes before or during use 	<ul style="list-style-type: none"> Hiccups Cough Heartburn 	OTC Only: <ul style="list-style-type: none"> Generic/other Commit

Medication	Dosage	Use Instructions	Cautions/Warnings	Side Effects	Availability
<i>Nicotine Nasal Spray</i>	<ul style="list-style-type: none"> 1 dose = 1 squirt/nostril 1 to 2 doses per hour Up to 40 doses per day 	<ul style="list-style-type: none"> Use 3–6 months 	<ul style="list-style-type: none"> Not for patients with asthma May irritate nose May cause dependence 	<ul style="list-style-type: none"> Nasal irritation 	Rx Only: <ul style="list-style-type: none"> Nicotrol NS
<i>Nicotine Patch</i>	If smokes 10 cigs/day: <ul style="list-style-type: none"> 21mg/day for 4 wks, then 14 mg/day for 2 wks, then 7mg/day for 2 wks If smokes < 10 cigs/day: <ul style="list-style-type: none"> Start with 14mg/day 	<ul style="list-style-type: none"> Use new patch every morning for 8–12 wks 	<ul style="list-style-type: none"> Do not use if patient has severe eczema or psoriasis Can remove at night if sleep disruption 	OTC or Rx <ul style="list-style-type: none"> Generic/other Nicoderm CQ Nicotrol 	
<i>Varenicline</i>	<ul style="list-style-type: none"> Days 1–3: 0.5 mg every morning Days 4–7: 0.5 mg twice daily Days 8–end: 1 mg twice daily 	<ul style="list-style-type: none"> Start 1 wk before quit date. Use 3–6 months 	Use with caution in patients: <ul style="list-style-type: none"> With significant renal impairment With serious psychiatric illness Undergoing dialysis See FDA websites for: 1) Boxed Warning on serious mental health events and 2) risk of cardiovascular adverse events in patients with cardiovascular disease: http://www.fda.gov/NewsEvents/Newsroom/PressAnnouncements/ucm170100.htm and http://www.fda.gov/Drugs/DrugSafety/ucm259161.htm	Rx Only: <ul style="list-style-type: none"> Nausea Insomnia Vivid or abnormal dreams 	Rx Only: <ul style="list-style-type: none"> Chantix
Combination Therapies: Patch + bupropion Patch + gum, inhaler or lozenge Follow individual medication instructions above		<ul style="list-style-type: none"> Follow individual medication instructions above 	<ul style="list-style-type: none"> Only patch + bupropion is currently FDA-approved Follow individual medication instructions above 	<ul style="list-style-type: none"> Follow individual medication instructions above 	See above

* See FDA website for full package insert information.

Table 3

Optional Pre-Cessation Medication Treatments

	Medications, Doses, & Use Instructions	Other/Special Instructions	Outcomes
For the patient <i>unwilling</i> to make a quit attempt now, BUT willing to reduce smoking and use NRT	<p>Consider:</p> <ul style="list-style-type: none"> Nicotine patch <ul style="list-style-type: none"> – 7–21 mg/day – Daily for up to six months Nicotine gum <ul style="list-style-type: none"> – 2–4 mg dose – Up to 10/day – Daily for up to six months Nicotine inhaler <ul style="list-style-type: none"> – 4 mg dose – Up to 10/day – Daily for up to six months 	<ul style="list-style-type: none"> Pair medication with counseling to reduce cigarettes/day as much as possible See patient in follow-up every 4 weeks to assess interest in quitting and to re-administer SRs or motivational interviewing (Table 1 and text) 	<ul style="list-style-type: none"> May result in more quit attempts and higher cessation rates at 3–6 months
For the patient <i>willing</i> to make a quit attempt now	<ul style="list-style-type: none"> Consider: Nicotine patch <ul style="list-style-type: none"> – 7–21 mg/day – Daily for 2–3 weeks before the Quit Date 	<ul style="list-style-type: none"> Patients may reduce smoking or not, while taking NRT leading up to the quit date 	<ul style="list-style-type: none"> May produce higher cessation rates