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Counseling for tobacco cessation

- Updated 2011 Mar 16 06:31:00 AM: correction (Arch Intern Med 2011 Mar 14) [view update](#)
- behavioral interventions including telephone counselling may increase abstinence rates in smokeless tobacco users (Cochrane Database Syst Rev 2011 Feb 16) [view update](#)
- combined telephone and internet intervention may improve self-reported abstinence compared to internet-only treatments (Arch Intern Med 2011 Jan 10) [view update](#)

Related Summaries:

- [Tobacco use disorder](#)
- [Bupropion for smoking cessation](#)
- [Nicotine replacement therapy for smoking cessation](#)
- [Varenicline](#)
- [Smoking cessation strategies for hospitalized patients](#)
- [Physician Quality Reporting System 2011 Quality Measures](#)

Overview:

- all clinicians should provide smoking cessation interventions ([PHS Strength of Evidence A](#))
 - all physicians should strongly advise every patient who smokes to quit because evidence shows that physician advice to quit smoking increases abstinence rates ([PHS Strength of Evidence A](#))
 - delivery of interventions by more than one type of clinician (for example, physician, nurse, pharmacist, oral health professional) is encouraged ([PHS Strength of Evidence C](#))
 - [brief advice](#) from physician may have small effect on smoking cessation rates ([level 2 \[mid-level\] evidence](#))

- [nursing advice and counseling](#) may slightly increase smoking cessation rates ([level 2 \[mid-level\] evidence](#))
- combining counseling and medication ([PHS Strength of Evidence A](#))
 - combination of counseling and medication is more effective than either alone and both should be offered
 - many counseling sessions in combination with medication are more effective than fewer in promoting abstinence
- clinicians should try to meet ≥ 4 times with individuals quitting tobacco use ([PHS Strength of Evidence A](#))
- using patient test results may support smoking cessation
 - informing patient of [spirometric lung age](#) increases smoking cessation rate at 12 months ([level 1 \[likely reliable\] evidence](#))
 - [sharing medical imaging results](#) with patients might increase smoking cessation behaviors ([level 2 \[mid-level\] evidence](#))
- counseling approaches
 - more intensive interventions (that is, more sessions, longer sessions) are more effective than less intensive interventions and should be used whenever possible ([PHS Strength of Evidence A](#)); [intensive behavioral interventions](#) associated with increased smoking cessation ([level 2 \[mid-level\] evidence](#))
 - smoking cessation interventions delivered using combinations of formats (proactive telephone counseling, group counseling, and individual counseling) increase abstinence rates and should be encouraged ([PHS Strength of Evidence A](#))
 - smoking cessation interventions should provide both ([PHS Strength of Evidence B](#))
 - practical counseling (such as recognizing situations that increase relapse risk and developing coping skills)
 - support and encouragement
 - [face-to-face individual smoking cessation counseling](#) may help patients quit ([level 2 \[mid-level\] evidence](#))
 - [motivational interviewing](#) appears to modestly increase smoking cessation compared with usual care or brief advice ([level 2 \[mid-level\] evidence](#))
 - consider tailored self-help materials (both print and Web-based) which appear effective in helping people quit ([PHS Strength of Evidence B](#))

- [self-help materials](#) associated with small benefit over no materials but may not offer additional benefit when used in conjunction with personal interaction or nicotine replacement therapy ([level 2 \[mid-level\] evidence](#))
 - [individualized self-help materials](#) appear more effective than untailored self-help materials ([level 2 \[mid-level\] evidence](#))
 - [group therapy](#) may be more effective than self-help programs ([level 2 \[mid-level\] evidence](#))
 - [telephone counseling](#) may help smokers interested in quitting ([level 2 \[mid-level\] evidence](#))
 - [web- and computer-based smoking cessation programs](#) may be effective for adults ([level 2 \[mid-level\] evidence](#))
- in adolescents
 - [some counseling approaches](#) may have modest efficacy for promoting cessation in adolescent smokers ([level 2 \[mid-level\] evidence](#))
 - [motivational interviewing](#) may reduce rates of tobacco use in teenagers ([level 2 \[mid-level\] evidence](#))
- for [smokeless tobacco users](#) behavioral interventions including telephone counselling may increase abstinence rates ([level 2 \[mid-level\] evidence](#))
- [for smokers unwilling to quit](#), provide motivational interviewing ([PHS Strength of Evidence B](#)) which may improve quit rates ([level 2 \[mid-level\] evidence](#))

▶ [Recommendations](#)

United States Public Health Service (PHS) recommendations:

- all physicians should strongly advise every patient who smokes to quit because evidence shows that physician advice to quit smoking increases abstinence rates ([PHS Strength of Evidence A](#))
- tobacco dependence treatment is effective and should be delivered even if specialized assessments (for example, questionnaire, serum cotinine study, pulmonary function tests) are not used or available ([PHS Strength of Evidence A](#))

- treatment delivered by a variety of clinician types increases abstinence rates, so all clinicians should provide smoking cessation interventions ([PHS Strength of Evidence A](#))
- combination of counseling and medication is more effective than either alone and both should be offered ([PHS Strength of Evidence A](#))
- effective medication should be offered to most patients unless contraindicated ([PHS Strength of evidence A](#))
- populations in which there is insufficient evidence for effectiveness include
 - pregnant women
 - smokeless tobacco users
 - adolescents
 - light smokers (< 10 cigarettes/day)
- clinician interventions
 - minimal interventions lasting < 3 minutes increase overall tobacco abstinence rates and should be offered to every tobacco user whether or not he or she is referred to intensive intervention ([PHS Strength of Evidence A](#))
 - more intensive interventions (that is, more sessions, longer sessions) are more effective than less intensive interventions and should be used whenever possible ([PHS Strength of Evidence A](#))
 - clinicians should try to meet ≥ 4 times with individuals quitting tobacco use ([PHS Strength of Evidence A](#))
- counseling considerations
 - proactive telephone counseling, group counseling, and individual counseling formats are effective and should be used in smoking cessation interventions ([PHS Strength of Evidence A](#))
 - smoking cessation interventions delivered in combinations of formats increase abstinence rates and should be encouraged ([PHS Strength of Evidence A](#))
 - smoking cessation interventions should provide both ([PHS Strength of Evidence B](#))
 - practical counseling (such as recognizing situations that increase relapse risk and developing coping skills)
 - support and encouragement
 - consider tailored self-help materials, both print and Web-based, to help people quit ([PHS Strength of Evidence B](#))

- for smokers unwilling to quit, provide motivational interviewing ([PHS Strength of Evidence B](#))
- Reference – [DHHS 2008 May PDF](#) or at [National Guideline Clearinghouse 2008 May 12:12520^{\(1\)}](#)

▶ [General Efficacy](#)

- **face-to-face individual smoking cessation counseling may help patients quit ([level 2 \[mid-level\] evidence](#))**
 - based on Cochrane review of trials with unclear or inadequate allocation concealment
 - systematic review of 30 randomized or quasi-randomized trials with > 7,000 patients evaluating face-to-face individual counseling from healthcare worker not involved in routine clinical care
 - 22 trials had unclear or inadequate allocation concealment
 - comparing counseling vs. control groups
 - quit rates 11% vs. 7.8% in analysis of 18 trials with 7,855 patients ($p = 0.00001$, NNT 32)
 - quit rates 18.2% with counseling plus nicotine replacement therapy vs. 12.8% with nicotine replacement therapy alone in analysis of 4 trials with 1,732 patients ($p = 0.034$, NNT 19)
 - analyses limited to trials with adequate allocation concealment not reported
 - no difference in quit rates comparing more intensive counseling vs. brief counseling in analysis of 5 trials with 1,897 patients
 - Reference – [Cochrane Database Syst Rev 2008 Oct 8;\(4\):CD001292](#)
- **intensive behavioral interventions associated with increased smoking cessation ([level 2 \[mid-level\] evidence](#))**
 - based on systematic review with heterogeneity tests not performed
 - systematic review of 50 randomized trials evaluating efficacy of 4 behavioral interventions (minimal clinical intervention or intensive interventions via individual, group or telephone counseling) for smoking cessation in 26,927 patients
 - smoking cessation biochemically validated at 6 and/or 12 months
 - method and duration of interventions varied widely
 - odds ratios for mean treatment effect of promotion of smoking cessation

- 1.5 with brief advice from healthcare worker (not significant)
 - 1.49 with individual counseling ($p < 0.05$)
 - 1.76 with group counseling ($p < 0.05$)
 - 1.58 with telephone counseling ($p < 0.05$)
- Reference – [Eur Heart J 2009 Mar;30\(6\):718](#)
- *DynaMed commentary* -- authors report interventions that were clearly heterogeneous despite no heterogeneity tests being performed
- **for smoking cessation in adolescents, some counseling approaches may have modest efficacy ([level 2 \[mid-level\] evidence](#))**
 - based on Cochrane review with inadequate power in high quality trials
 - systematic review of 24 randomized or controlled trials of interventions for smoking cessation in > 5,000 regular tobacco smokers < 20 years old
 - interventions associated with increased cessation
 - transtheoretical model (stages of change) approach (compared to standard care) in analysis of 2 trials with 1,537 adolescents
 - odds ratio [OR] at 1 year 1.7 (95% CI 1.25–2.33)
 - NNT 10–46 assuming 10% abstinence in controls
 - motivational enhancement (compared to brief intervention) in analysis of 11 trials with 2,503 adolescents
 - OR at ≥ 6 months 1.7 (95% CI 1.31–2.2)
 - NNT 12–41 assuming 9% abstinence in controls
 - Not on Tobacco cognitive behavioral intervention (compared to brief intervention) in analysis of 4 trials with 1,073 adolescents
 - OR at ≥ 6 months 1.77 (95% CI 1–3.11)
 - all trials reported nonsignificant increase in cessation
 - nicotine replacement associated with nonsignificant trend toward increased abstinence at 6 months in 1 underpowered trial with 120 adolescents
 - addition of bupropion to nicotine patch had no effect in 1 trial with 211 adolescents
 - no significant difference comparing bupropion 300 mg vs. 150 mg daily in 1 trial with 312 adolescents
 - Reference – [Cochrane Database Syst Rev 2010 Jan 20;\(1\):CD003289](#)

▶ [Motivational Interviewing](#)

Motivational interviewing:

- **motivational interviewing appears to modestly increase smoking cessation compared with usual care or brief advice ([level 2 \[mid-level\] evidence](#))**
 - based on Cochrane review of trials with unclear allocation concealment
 - systematic review of 14 randomized trials evaluating effect of motivational interviewing on smoking cessation in > 10,000 adult smokers (pregnant women excluded)
 - comparisons included brief advice or usual care in most trials
 - unclear or inadequate allocation concealment in 11 trials
 - motivational interviewing significantly increased abstinence
 - risk ratio 1.27 (95% CI 1.14–1.42) in analysis of 14 trials with 10,538 adults
 - NNT 27–80 assuming 9% abstinence in controls
 - sessions > 20 minutes long or delivered by general practitioners reported higher levels of abstinence
 - both single and multiple sessions appeared effective
 - Reference – [Cochrane Database Syst Rev 2010 Jan 20;\(1\):CD006936](#)
- **motivational interviewing in pediatric clinic intervention may increase abstinence rates among smoking mothers ([level 2 \[mid-level\] evidence](#))**
 - based on randomized trial with high loss to follow-up
 - 303 women smokers whose children received pediatric clinic care were randomized to intervention vs. control
 - intervention consisted of motivational message from pediatrician, guide to quitting smoking, 10-minute motivational interview with clinic or study nurse, and up to 3 outreach telephone counseling calls in 3 months
 - 80% response rates at 3 and 12 months
 - comparing motivational interview vs. control
 - self-reported abstinence at 3 months in 7.7% vs. 3.4%
 - self-reported abstinence at 12 months in 13.5% vs. 6.9% (NNT 15)
 - Reference – [Arch Pediatr Adolesc Med 2003 Mar;157\(3\):295 full-text](#), summary can be found in [Am Fam Physician 2003 Oct 15;68\(8\):1658](#), commentary can be found in Evidence-Based Medicine 2003 Nov-Dec;8(6):180

- **motivational interviewing by specially trained midwives may not increase smoking cessation ([level 2 \[mid-level\] evidence](#))**
 - based on randomized trial with low adherence rate
 - 762 pregnant women randomized to offer of motivational interviewing vs. standard health promotion materials
 - only 74% of intervention group had motivational interviews
 - patient report of smoking cessation verified by cotinine concentration 4.8% in intervention group vs. 4.6% in control (not significant)
 - Reference – [BMJ 2005 Aug 13;331\(7513\):373 full-text](#)
- **motivational interviewing may reduce rates of tobacco use in teenagers ([level 2 \[mid-level\] evidence](#))**
 - based on randomized trial without adequate attention control
 - 2,526 teenagers aged 14–17 years seen in pediatric or family practice department of health maintenance organization were randomized to tobacco intervention vs. brief dietary advice
 - tobacco intervention was individually tailored on basis of smoking status and stage of change and included 30-second clinician advice message, 10-minute interactive computer program, 5-minute motivational interview, and up to two 10-minute telephone or in-person booster sessions
 - control intervention was 5-minute motivational intervention to promote increased consumption of fruits and vegetables
 - 86% tobacco intervention group and 90% control group were followed up at 2 years
 - no significant baseline differences except 48.5% vs. 58.3% screened positive for depression
 - comparing tobacco intervention group vs. control at 1 year
 - smoke-free for 30 days 77.2% vs. 72.8%, odds ratio [OR] 1.27, (95% CI 1.08–1.51)
 - smokers at baseline who were smoke-free for 30 days 32.5% vs. 23.1% of those who (OR 1.55 (95% CI 1.05–2.31))
 - nonsmokers at baseline who were smoke-free for 30 days 90.8% vs. 87.9% of those who were OR 1.37 (95% CI 1.01–1.85)
 - comparing tobacco intervention group vs. control at 2 years

- smoke-free for 30 days 72.8% vs. 68.6%, OR 1.23 (95% CI 1.031–1.47)
 - nonsmokers at baseline who were smoke-free for 30 days 85.8% vs. 83.1% of those who were (not significant)
 - smokers at baseline were who smoke-free for 30 days 29.7% vs. 20.9% OR 1.55 (95% CI 1.02–1–2.36)
 - results similar using 6 different methods of analysis (intent-to-treat approaches with different adjustments for missing data)
 - Reference – [Pediatrics 2005 Apr;115\(4\):981 full-text](#), commentary can be found in Evidence-Based Medicine 2005 Sep-Oct;10(5):144
- unmotivated patients may benefit from “5-R” strategy⁽¹⁾
 - **Relevance** – encourage patient to indicate why quitting is personally relevant
 - **Risks** – identify potential negative consequences of tobacco use
 - **Rewards** – ask patient to identify potential benefits of stopping tobacco use.
 - **Roadblocks** – ask patient to identify potential benefits of stopping tobacco use.
 - **Repetition** – repeat at each patient visit
- **either motivational interviewing, or combination of counseling to reduce smoking and nicotine replacement therapy (NRT), may improve quit rates in smokers uninterested in quitting (level 2 [mid-level] evidence)**
 - based on randomized trial without blinded outcome assessment
 - 616 smokers willing to participate in the study (\$75 provided for participation) but not interested in participating in active smoking cessation study were randomized to 1 of 3 groups
 - no treatment
 - counseling to cut back on smoking and offer of NRT at 0 and 3 weeks with brief advice to quit at 6 weeks
 - motivational interviewing and offer of NRT at weeks 0 and 3 and brief advice to quit at 6 weeks
 - entire study was conducted by telephone, outcomes were self-reported and interviewers were not blinded to treatment assignment
 -

Outcomes (p values vs. No treatment)

	Smoking reduction counseling plus nicotine replacement therapy	Motivational interviewing	No treatment
Abstinence for prior 7 days at 24 weeks	18% (p < 0.01, NNT 8)	23% (p < 0.01, NNT 6)	4%
Abstinence for prior 7 days at 6 weeks	1%	1%	1%
Any quit attempt at 24 weeks	54% (p < 0.01, NNT 4)	59% (p < 0.01, NNT 3)	24%
Any 24-hour quit attempt at 24 weeks	43% (p < 0.01, NNT 4)	51% (p < 0.01, NNT 3)	16%

- Reference – [J Consult Clin Psychol 2004 Jun;72\(3\):371](#), commentary can be found in Evidence-Based Medicine 2005 Jan-Feb;10(1):18

Stages of change:

- **stage-based interventions do not appear more effective compared to non-stage-based interventions ([level 2 \[mid-level\] evidence](#))**
 - based on Cochrane review and systematic review with low-quality trials and limited evidence
 - **stage-based interventions do not appear more effective compared to nonstage-based interventions ([level 2 \[mid-level\] evidence](#))**
 - based on Cochrane review of mostly low-quality trials
 - systematic review of 41 randomized trials comparing stage-based interventions to nonstage-based controls, usual care or with assessment only for in > 33,000 patients followed for ≥ 6 months
 - direct comparisons only in low-quality trials; most trials with inadequately described randomization and allocation concealment or without blinding of outcome assessors

- no significant differences for smoking cessation in direct comparison of stage-based to nonstage based equivalent interventions
 - stage-based self-help materials compared to nonstage-based standard self-help materials in analysis of 2 trials with 2,117 patients
 - stage-based counselling compared to nonstage-based standard counselling in analysis of 2 trials with 1,138 patients
- no significant difference in indirect comparisons of stage-based self-help or counselling interventions compared to any control condition (31 trials)
- insufficient evidence to evaluate comparisons in telephone counselling, interactive computer programmes or training of doctors or lay supporters
- Reference – [Cochrane Database Syst Rev 2010 Nov 9;\(11\):CD004492](#)
- **stage-based interventions do not appear more effective than non-stage-based interventions or no intervention, but evidence limited**
 - based on systematic review of 23 randomized trials of stage-based interventions
 - results generally not significant in comparisons of stage-based interventions vs. non-stage-based or no interventions
 - authors found only 2 studies clearly assessed patient's stage of change with validated instrument and were unable to determine to extent intervention was tailored based on patient's stage
 - Reference – [BMJ 2003 May 31;326\(7400\):1175 PDF](#)
- review of "Stages of Change" approach to helping patients change behavior can be found in [Am Fam Physician 2000 Mar 1;61\(5\):1409](#)

▶ [Counseling by Clinicians](#)

- all clinicians should provide smoking cessation interventions ([PHS Strength of Evidence A](#))
- delivery of interventions by more than one type of clinician (for example, physician, nurse, pharmacist, oral health professional) is encouraged ([PHS Strength of Evidence C](#))

Counseling by physicians:

- all physicians should provide smoking cessation interventions ([PHS Strength of Evidence A](#))
- **brief advice from physician may have small effect on smoking cessation rates (level 2 [mid-level] evidence)**
 - based on Cochrane review of trials with methodologic limitations
 - systematic review of 41 randomized trials evaluating brief advice from medical practitioner on smoking cessation after ≥ 6 months in $> 31,000$ smokers
 - most common setting was primary care
 - most trials had unclear methods of randomization and allocation concealment
 - 17 trials of brief advice vs. no advice (or usual care) revealed small but significant increase in odds of quitting equivalent to absolute difference in cessation rate of about 2.1% (NNT 48)
 - intensive advice and follow-up visits had small additional effect in direct comparisons with minimal advice
 - Reference – [Cochrane Database Syst Rev 2008 Apr 16;\(2\):CD000165](#)
- **physician-delivered smoking cessation program for patients having bronchoscopy might increase smoking cessation rates (level 2 [mid-level] evidence)**
 - based on randomized trial with high loss to follow-up
 - 233 patients (mean age 57 years) having bronchoscopy randomized to physician-delivered smoking cessation program vs. usual care and followed for 12 months
 - physician-delivered smoking cessation program was two 15 minute counseling sessions and anti-smoking booklet
 - usual care was brief advice against smoking as part of routine care
 - 42% of patients died or lost to follow-up at 12 months
 - comparing physician delivered smoking program vs. control
 - smoking cessation in 41% vs. 27% at 6 months ($p < 0.05$, NNT 8)
 - smoking cessation in 29% vs. 13% at 12 months (not significant)
 - Reference – [Respir Med 2010 Jan;104\(1\):61](#)
- **caring, supportive, individualized approach to physician advice more acceptable to patients than routine, ritualized advice to quit**

- based on qualitative study
- qualitative interviews of 42 participants in smoking intervention program found that many smokers are skeptical about power of doctors' words to influence smoking and that repeated ritualistic intervention by doctors may deter patients from seeking medical help
- interventions that patients found acceptable took account of their receptiveness, were conveyed in a respectful tone, avoided preaching, showed support and caring, and attempted to understand them as a unique individual
- Reference – [BMJ 1998 Jun 20;316\(7148\):1878](#)

Counseling by nurses:

- **nursing advice and counseling may slightly increase smoking cessation rates (level 2 [mid-level] evidence)**
 - based on Cochrane review limited by heterogeneity
 - systematic review of 42 randomized trials evaluating smoking cessation interventions by nurses with minimum follow-up of 6 months
 - smoking cessation rates at longest follow-up 13.8% vs. 12% in analysis of 31 trials with 15,205 patients ($p < 0.00001$, NNT 56)
 - disparate types of counseling given in both inpatient and outpatient settings to variety of patient populations
 - low-intensity interventions not as effective as high-intensity interventions in subgroup analysis
 - limited indirect evidence that interventions are more effective for hospital inpatients with cardiovascular disease than for inpatients with other conditions
 - Reference – systematic review last updated 2007 Oct 21 ([Cochrane Library 2008 Issue 1:CD001188](#)), earlier version (meta-analysis of 34 trials) can be found in [Heart Lung 2006 May-Jun;35\(3\):147](#)

Counseling by oral health professionals:

- **tobacco cessation advice and support through public dental clinics associated with higher smoking abstinence than standard cessation advice from dentist (level 2 [mid-level] evidence)**
 - based on randomized trial with high dropout rate

- 2,549 smokers randomized to intervention at community health center dental clinic (advice and assistance including nicotine replacement and quitline counseling) vs. standard care (usual cessation advice given by dentist)
- 71% completed follow-up survey at 7.5 months with higher return rate with standard care ($p < 0.01$)
- point prevalence quit rate (no tobacco in past 7 days at 7.5 month follow-up) in
 - entire sample 11.3% vs. 6.8% ($p < 0.05$, NNT 23)
 - non-Hispanic African Americans 12.2% vs. 7.7% ($p < 0.05$, NNT 23)
 - non-Hispanic Whites 10.7% vs. 4.9% ($p < 0.01$, NNT 18)
 - Hispanics 7.4% vs. 7.6% (not significant)
- prolonged abstinence (no tobacco use in 6 months after enrollment plus 6-week grace period) in
 - entire sample 5.3% vs. 1.9% ($p < 0.01$, NNT 30)
 - non-Hispanic African Americans 6.5% vs. 2.0% ($p < 0.001$, NNT 23)
 - non-Hispanic Whites 4.6% vs. 2.3% ($p < 0.05$, NNT 44)
 - Hispanics 3.2% vs. 1.1% (not significant)
- intervention factors associated with independent prediction prolonged abstinence
 - nicotine replacement (odds ratio [OR] 3.36, 95% CI 1.99–5.32)
 - calling the quit line (OR 2.04, 95% CI 1.14–3.66)
- Reference – [Am J Public Health 2010 Jul;100\(7\):1307](#)
- **smoking cessation intervention provided by dental hygienist associated with nonsignificant increase in smoking cessation rates ([level 2 \[mid-level\] evidence](#))**
 - based on randomized trial with wide confidence intervals
 - 118 patients attending periodontology clinic were randomized to smoking cessation advice based on 5As (ask, advise, assess, assist, arrange follow-up) and offered nicotine replacement therapy vs. usual care provided by dental hygienists
 - smoking cessation rates comparing intervention vs. usual care
 - at 3 months 15% vs. 9% (95% CI for difference –8.4% to 25.6%)
 - at 6 months 10% vs. 5% (not significant)

- at 12 months 7% vs. 4% (not significant)
 - intervention associated with significantly higher rate of quit attempts at 3 and 6 months
 - Reference – [BMC Oral Health 2007 May 2;7:5 full-text](#)
- **dental setting for smoking cessation intervention associated with increased continuous abstinence rates at 3, 6 and 12 months ([level 2 \[mid-level\] evidence](#))**
 - based on small randomized trial
 - 56 persons willing to stop smoking randomized to intervention (5 counseling sessions plus nicotine replacement regimen) vs. no intervention group
 - 27% participants lost to follow up (counted as smokers for intent-to-treat analysis)
 - reported abstinence verified by salivary cotinine levels
 - comparing continuing abstinence rates for intervention vs. no intervention group
 - 51.5% vs. 13% at 3 months ($p = 0.006$, NNT 3)
 - 39.4% vs. 13% at 6 months ($p = 0.01$, NNT 4)
 - 36.4% vs. 13% at 12 months ($p = 0.021$, NNT 5)
 - Reference – [J Dent Res 2010 Jan;89\(1\):66](#)
- **interventions for tobacco use conducted by oral health professionals may increase tobacco abstinence rates among smokeless tobacco users ([level 2 \[mid-level\] evidence](#))**
 - based on Cochrane review limited by heterogeneity
 - systematic review of 6 randomized or pseudo-randomized trials with follow-up at least 6 months
 - 5 studies limited to smokeless tobacco users
 - all interventions studied included behavioral interventions and oral examination
 - intervention associated with increased tobacco abstinence rates > 12 months compared to controls, odds ratio [OR] 1.44, 95% CI 1.16–1.78
 - heterogeneity not explained in subgroup analyses
 - Reference – systematic review last updated 2005 Nov 3 ([Cochrane Library 2006 Issue 1:CD005084](#))

Counseling by pharmacists:

- **trained community pharmacists may improve smoking cessation rates ([level 2 \[mid-level\] evidence](#))**
 - based on Cochrane review with limited evidence
 - systematic review identified only 2 trials with 976 smokers
 - 1 trial increased self-reported cessation rates at 12 months from 2.7% to 14.3% ($p < 0.001$, NNT 9)
 - 1 trial had non-significant beneficial trend at 9 months (7.4% vs. 12%, $p = 0.09$)
 - Reference – systematic review last updated 2003 Nov 18 ([Cochrane Library 2004 Issue 1:CD003698](#))
- **pharmacist-delivered interventions might improve smoking cessation rates ([level 2 \[mid-level\] evidence](#))**
 - based on systematic review of 5 controlled and 10 uncontrolled studies
 - 3 controlled studies reported statistically significant effects
 - Reference – [Pharmacotherapy 2007 Jul;27\(7\):1040](#)

Counseling by mental health professionals:

- **smoking cessation intervention integrated with mental health care and delivered by mental health clinicians may reduce smoking in patients with posttraumatic stress disorder (PTSD) ([level 2 \[mid-level\] evidence](#))**
 - based on randomized trial without attention control
 - 943 smokers (mean age 54 years) with military-related PTSD randomized to smoking cessation treatment integrated with mental health care for PTSD vs. referral to Veterans Affairs smoking cessation clinic and followed for 18–48 months
 - integrated program provided individual PTSD and smoking cessation counseling delivered by mental health clinicians in 5 weekly sessions followed by 3 follow-up visits and then monthly sessions plus prescribed smoking cessation medications
 - Veterans Affairs smoking cessation clinic followed usual smoking cessation practice guidelines and prescribed cessation medications in 4–16 treatment sessions
 - 80% of integrated care group and 51.3% of control group attended ≥ 1 counseling session
 - trial terminated early before planned enrollment of 1,400 patients due to low recruitment

- comparing integrated program vs. control
 - self-reported abstinence between 6 and 18 months in 15.5% vs. 7% ($p < 0.001$, NNT 12)
 - bioverified abstinence between 6 and 18 months in 8.9% vs. 4.5% ($p = 0.007$, NNT 23)
 - 7-day point prevalence abstinence at 18 months 18.2% vs. 10.8% ($p < 0.001$, NNT 14)
 - 30-day point prevalence abstinence at 18 months 16.9% vs. 9.3% ($p < 0.001$, NNT 14)
 - median time to relapse following initial 24-hour quit 29 days vs. 8 days ($p < 0.001$)
 - smoking cessation medication use in 84% vs. 79.3% (not significant)
 - total days of smoking cessation medication use 104 days vs. 68.5 days ($p < 0.001$)
- no significant differences in psychiatric status or serious adverse events at 18 months
- Reference – [JAMA 2010 Dec 8;304\(22\):2485](#), editorial can be found in [JAMA 2010 Dec 8;304\(22\):2534](#)

▶ [Tests Results for Counseling](#)

Spirometry:

- **informing patient of spirometric lung age increases smoking cessation rate at 12 months ([level 1 \[likely reliable\] evidence](#))**
 - based on randomized trial in England
 - 561 patients > 35 years old who smoked were randomized to receive spirometric lung function assessment results in terms of “lung age” (age of average healthy person performing similarly on spirometry) immediately vs. raw figure for forced expiratory volume at 1 second (results provided in writing after 1 month)
 - all participants advised to quit and offered referral to local National Health Service smoking cessation services
 - follow-up completed in 89%
 - smoking cessation verified by salivary cotinine testing at 12 months
 - lung age calculation formula

- for men lung age (in years) = $(2.87 \times \text{height [in inches]}) - (31.25 \times \text{observed FEV1 [in liters]}) - 39.375$
- for women lung age (in years) = $(3.56 \times \text{height [in inches]}) - (40 \times \text{observed FEV1 [liters]}) - 77.28$
- comparing lung age vs. raw figure
 - smoking cessation in 13.6% vs. 6.4% ($p = 0.005$, NNT 14, 95% CI 9–46)
 - mean daily cigarette consumption 11.7 vs. 13.7 cigarettes ($p = 0.03$)
 - new diagnosis of chronic obstructive lung disease in 17% vs. 14% (statistical significance not stated)
- Reference – Step2quit trial ([BMJ 2008 Mar 15;336\(7644\):598 full-text](#)), editorial can be found in [BMJ 2008 Mar 15;336\(7644\):567](#), commentary can be found in [BMJ 2008 May 10;336\(7652\):1034](#), [ACP J Club 2008 Jul;149\(1\):5](#)

Imaging studies:

- **sharing medical imaging results with patients might increase smoking cessation behaviors ([level 2 \[mid-level\] evidence](#))**
 - based on Cochrane review with clinical heterogeneity
 - systematic review of 9 randomized or quasi-randomized trials evaluating efficacy of visual feedback from medical imaging procedures to change health behaviors in 1,371 participants
 - 5 trials included clinical populations, 4 included healthy nonclinical populations
 - 3 trials with 114 patients included data on effect of imaging feedback (ultrasound or computed tomography) on smoking cessation behaviors but used different outcome measures and follow-up durations (4 weeks to 1 year)
 - sharing medical imaging results associated with increase in smoking cessation behavior (odds ratio 2.81, 95% CI 1.23–6.41) in analysis of 3 trials
 - Reference – [Cochrane Database Syst Rev 2010 Jan 20;\(1\):CD007434](#)

Biochemical markers:

- **limited evidence does not support use of biochemical markers to improve smoking cessation rates ([level 2 \[mid-level\] evidence](#))**
 - based on Cochrane review of mostly low quality trials
 - systematic review of 11 randomized trials (12 interventions) evaluating use of exhaled carbon monoxide (3 trials), exhaled carbon monoxide and spirometry (3 trials), spirometry alone (3 trials), genetic susceptibility (2 trials) or ultrasound of carotid and femoral arteries (1 trial) as additional components of smoking cessation intervention
 - 1 high quality trial described [below](#)
 - only 2 trials showed statistically significant increase in smoking cessation with treatment
 - spirometry with immediate feedback on “lung age” (13.6% vs. 6.4% in controls)
 - ultrasound with photographic demonstration of atherosclerotic plaques if present (17% vs. 6.3% in controls)
 - no significant differences in smoking cessation rate after at ≥ 6 months in other trials
 - Reference – [Cochrane Database Syst Rev 2009 Apr 15;\(2\):CD004705](#)
- **point of care test measuring salivary nicotine metabolites in oral health setting may increase smoking cessation rate ([level 2 \[mid-level\] evidence](#))**
 - based on randomized trial without intention to treat analysis
 - 100 adult smokers at single general dental practice in London were given smoking cessation counseling, had point of care test measuring salivary nicotine metabolites, and were randomized to receive test results during baseline visit vs. at 8 week follow-up
 - outcomes for immediate test result group vs. delayed test result group
 - 23% vs. 7% quit smoking ($p < 0.039$, NNT 7)
 - 68% vs. 28% reduced overall tobacco use ($p < 0.001$, NNT 3)
 - 10 patients did not return for 8-week follow-up and were not included in analysis, outcomes in these 10 patients could potentially make findings no longer significant
 - Reference – [BMJ 2005 Oct 29;331\(7523\):999 full-text](#), editorial can be found in [BMJ 2005 Oct 29;331\(7523\):979](#)

▼ [Counseling via Technology](#)

Telephone counseling:

- **telephone counseling may help smokers interested in quitting ([level 2 \[mid-level\] evidence](#))**
 - based on Cochrane review limited by heterogeneity
 - systematic review of 65 randomized or quasi-randomized trials evaluating proactive or reactive telephone counseling to assist smoking cessation
 - for smokers who contacted helplines
 - multiple call-backs significantly helped smokers achieve higher long-term cessation (10.6% vs. 7.5% in controls, odds ratio 1.37, 95% CI 1.26–1.5) in analysis of 9 trials with > 24,000 participants, results may be limited by heterogeneity ($p = 0.02$)
 - different counseling approaches during a single session not associated with significant differences in smoking cessation in 3 trials
 - for telephone counseling not initiated by calls to helplines
 - significantly improved long-term smoking cessation (odds ratio 1.29, 95% CI 1.2–1.38) in analysis of 44 trials with > 24,000 participants, results may be limited by heterogeneity ($p = 0.001$)
 - maximum number of planned calls (as measure of intensity) not associated with effect size in meta-regression analysis but ≥ 3 calls increased quit rates with no significant effect with minimal intervention in subgroup analysis
 - slightly larger effect size in subgroup of 14 trials recruiting smokers motivated to quit
 - more intensive interventions significantly improved cessation rates compared with less intensive intervention in 2 trials
 - Reference – [Cochrane Database Syst Rev 2009 Jul 8;\(3\):CD002850](#)
- **mobile phone-based interventions (including text messaging) may increase self-reported abstinence in smokers interested in quitting ([level 2 \[mid-level\] evidence](#))**
 - based on Cochrane review without high quality trials
 - systematic review of 4 randomized or quasi-randomized trials comparing mobile phone-based interventions vs. usual care in smokers interested in quitting
 - limitations included unclear allocation concealment, high dropout rates, and unblinded participants

- significant increase in self-reported abstinence
 - in text messaging programs
 - risk ratio at 4–6 weeks post-cessation 2.18 (95% CI 1.8–2.65, NNT 5–10 assuming 13% abstinence rate in controls) in analysis of 2 trials with 1,905 patients
 - significant difference persisted in long-term follow-up of largest trial, but abstinence rates decreased in each group
 - in internet and mobile phone programs (in analysis of 2 trials with 696 patients)
 - risk ratio at 4 weeks post-cessation 1.89 (95% CI 1.52–2.35, NNT 3–8 assuming 24% abstinence rate in controls)
 - risk ratio at 12 months post-cessation 1.49 (95% CI 1.18–1.9, NNT 5–25 assuming 23% abstinence rate in controls)
- Reference – [Cochrane Database Syst Rev 2009 Oct 7;\(4\):CD006611](#)
- **addition of counseling calls to pharmacotherapy may improve smoking abstinence ([level 2 \[mid-level\] evidence](#))**
 - based on randomized trial with low follow-up rate
 - 750 persons (mean age 47 years) who smoked ≥ 10 cigarettes per day randomized to 1 of 3 treatments every 6 months for 24 months
 - pharmacotherapy (bupropion or transdermal nicotine patch)
 - 2 counseling calls plus pharmacotherapy (moderate-intensity disease management)
 - up to 6 counseling calls plus pharmacotherapy (high-intensity disease management)
 - 28% lost to follow-up
 - validated smoking abstinence at 12 months
 - 9.8% in moderate-intensity group
 - 11.3% in high-intensity group
 - 5.3% in pharmacotherapy group ($p = 0.01$ vs. combined high and moderate intensity groups)
 - validated smoking abstinence at 24 months (no significant difference)
 - 14.7% in moderate-intensity group
 - 14.8% in high-intensity group

- 13.5% in pharmacotherapy group
 - Reference – [Ann Intern Med 2009 Apr 7;150\(7\):437](#), editorial can be found in [Ann Intern Med 2009 Apr 7;150\(7\):496](#)
- **addition of telephone-based counseling to office-based interventions may increase smoking abstinence ([level 2 \[mid-level\] evidence](#))**
 - based on randomized trial without attention control
 - 837 daily smokers randomized to telephone-based counseling vs. standard care (mailed self-help materials)
 - telephone-based counseling consisted of 7 calls scheduled over a 2-month period in a relapse-sensitive fashion plus additional courtesy calls at discretion of counselor for up to 3 quit attempts over 12 months
 - telephone counselors encouraged nicotine replacement therapy
 - comparing telephone-based counseling vs. standard care
 - reported any use of smoking cessation medications at 3 months in 86.3% vs. 30.1% ($p < 0.05$, NNT 2)
 - 6-month abstinence at 1 year in 13% vs. 4.1% ($p < 0.05$, NNT 12)
 - Reference – [Arch Intern Med 2006 Mar 13;166\(5\):536 full-text](#), commentary can be found in Evidence-Based Medicine 2006 Sep-Oct;11(5):137
- **combined telephone and internet intervention may improve self-reported abstinence compared to internet-only treatments ([level 2 \[mid-level\] evidence](#))**
 - based on randomized trial with method of randomization not described
 - 2,005 adult (mean age 36 years) who smoked ≥ 5 cigarettes per day were randomized to 1 of 3 treatments for 6 months
 - information-only, noninteractive internet-based educational program including general cessation information, cessation pharmacotherapy information, directory of cessation programs, and database of frequently asked questions
 - tailored, interactive internet-based program including quitting advice, quit-date assistance, motivational assessment, problem solving and skills training content, pharmacotherapy assistance and social support

- tailored internet program plus phone counseling with 5 calls including intensive support in first 30 days after quit date
 - self-reported 30-day point prevalence abstinence
 - at all follow-up intervals up to 6 months ($p < 0.001$)
 - 6.6% for noninteractive internet group
 - 7.4% for tailored internet group
 - 12.4% for tailored internet plus telephone group (NNT 18 vs. noninteractive)
 - at 18 months ($p = 0.002$)
 - 3.5% for noninteractive internet group
 - 4.5% for tailored internet group
 - 7.7% for tailored internet plus telephone group (NNT 24 vs. noninteractive)
 - Reference – [Arch Intern Med 2011 Jan 10;171\(1\):46](#), correction can be found in Arch Intern Med 2011 Mar 14;171(5):395, commentary can be found in [Arch Intern Med 2011 Jan 10;171\(1\):53](#)
- some trials did not find efficacy for telephone-based counseling
 - **proactive telephone cessation advice from nurses may not improve smoking cessation (level 2 [mid-level] evidence)**
 - based on randomized trial with high dropout rate
 - 318 patients aged 18–65 years who smoked were randomized to telephone cessation advice based on stages of change from nurse vs. usual care and followed for 12 months
 - 67% of patients completed 12 month follow-up
 - comparing telephone cessation advice from nurse vs. usual care
 - smoking quit rates at 6 months 9% vs. 8% (not significant)
 - smoking quit rates at 126 months 8% vs. 6% (not significant)
 - Reference – [BMC Fam Pract 2008 Feb 28;9:16 full-text](#)
 - **reactive telephone counseling may not be associated with improved smoking cessation rates (level 2 [mid-level] evidence)**
 - based on randomized trial with high dropout rate
 - 990 adults who smoked and called helpline were randomized to mailed self-help literature plus supplemental live reactive

telephone counseling vs. mailed self-help literature alone and followed for 1 year

- 53% completed 12 month follow-up
 - no significant differences in self-reported abstinence rates at 1-, 3-, 6-, and 12-month follow-up
 - Reference – [Chest 2009 Nov;136\(5\):1229](#), editorial can be found in [Chest 2009 Nov;136\(5\):1199](#)
- **presenting the benefits of quitting (without presenting risks of smoking) in telephone counseling may improve smoking abstinence at 2 weeks but not at 3 months ([level 2 \[mid-level\] evidence](#))**
 - based on randomized trial with high dropout rate
 - 28 specialists working for a free telephone-based smoking cessation service were randomized to discuss only the benefits of quitting with patients vs. discussing both benefits of quitting and risks of continuing to smoke
 - 2,032 smokers that called were exposed to 1 message or the other
 - all callers received nicotine replacement therapy if medically able and followed for 3 months
 - 63% completed 3 month follow-up
 - comparing abstinence with benefits of quitting message vs. standard message
 - at 2 weeks 23.3% vs. 12.6% ($p < 0.001$, NNT 10)
 - at 3 months 28.4% vs. 26.6% (not significant)
 - Reference – [J Natl Cancer Inst 2010 Jan 20;102\(2\):96](#)

Web-based interventions:

- **web- and computer-based smoking cessation programs may be effective for adults ([level 2 \[mid-level\] evidence](#))**
 - based on systematic review of randomized trials with high dropout rates
 - systematic review of 22 randomized trials evaluating web- and computer-based smoking cessation programs with 29,549 participants followed for 12 weeks to 12 months
 - 10 studies used supplemental interventions including counseling, classroom lessons, nicotine replacement therapy, bupropion or quitlines

- comparing abstinence rates for web- and computer-based programs vs. control
 - at 3 months 14.8% vs. 14.3% (not significant) in meta-analysis of 8 trials
 - at 6-10 months 11.7% vs. 7% ($p < 0.001$) in meta-analysis of 8 trials
 - at 12 months 9.9% vs. 5.7% ($p < 0.001$) in meta-analysis of 7 trials
 - web- and computer-based programs associated with greater abstinence in
 - in 12 trials without supplemental interventions (risk ratio 1.59) with heterogeneity
 - in 10 trials with supplemental interventions (risk ratio 1.31)
 - no significant differences in abstinence for subgroups of adolescents in meta-analysis of 3 trials
 - Reference – [Arch Intern Med 2009 May 25;169\(10\):929](#), correction can be found in Arch Intern Med 2009 Jul 13;169(13):1194, commentary can be found in [Arch Intern Med 2009 Oct 26;169\(19\):1810](#)
- **tailored, interactive Internet-based interventions might increase smoking cessation rates compared to non-interactive and non-Internet interventions (level 2 [mid-level] evidence)**
 - based on Cochrane review of trials with clinical and statistical heterogeneity
 - systematic review of 20 randomized trials comparing Internet-based smoking cessation interventions to each other or to non-Internet based interventions or no intervention
 - follow-up ranged from ≥ 4 weeks to ≥ 12 months
 - limited meta-analyses possible due to heterogeneity of intervention approaches, patient populations and outcome measures
 - comparing abstinence rates at longest follow-up for Internet-based interventions to non-Internet interventions
 - Internet-based interventions had significantly higher abstinence rates in 2 trials with 686 adults and 1 trial with 351 adolescents
 - no significant differences in 3 trials with 1,657 adults and 2 trials with 275 adolescents

- comparing tailored, interactive internet-based interventions to non-interactive and non-Internet interventions, tailored interventions associated with
 - increased abstinence rates at 1–3 months in analysis of 10 trials with 26,816 patients
 - risk ratio 1.25 (95% CI 1.18–1.34)
 - results may be limited by heterogeneity ($p = 0.00002$)
 - increased abstinence rates at longest follow-up in analysis of 8 trials with 11,042 patients
 - risk ratio 1.22 (95% CI 1.08–1.38)
 - results may be limited by heterogeneity ($p = 0.0003$)
- Reference – [Cochrane Database Syst Rev 2010 Sep 08;\(9\):CD007078](#)
- **personalized smoking cessation messages on online college life magazine may improve 30-day abstinence, but not prolonged smoking cessation**
 - based on randomized trial with high dropout rate
 - 517 college smokers randomized to smoking cessation intervention consisting of visit to online college life magazine with personalized smoking cessation messages and peer e-mail support weekly for 30 weeks vs. control
 - 30-day smoking abstinence rate at 30 weeks 41% with intervention vs. 23% with control ($p < 0.001$)
 - no significant difference in self-reported 6-month prolonged abstinence among groups at week 30
 - Reference – [Prev Med 2008 Aug;47\(2\):194](#)

▶ [Self-Help Materials](#)

Self-help materials:

- **self-help materials associated with small benefit over no materials but may not offer additional benefit when used in conjunction with personal interaction or nicotine replacement therapy ([level 2 \[mid-level\] evidence](#))**
 - based on Cochrane review with results of unclear clinical significance
 - systematic review of 68 randomized trials evaluating self-help materials for smoking cessation with follow-up ≥ 6 months
 - comparing self-help materials vs. control on long-term abstinence

- 5.6% vs. 4.9% with no intervention in analysis of 12 trials with 14,787 adults ($p = 0.0075$, NNT 143)
 - 8% with individually tailored materials vs. 6.2% with standard or no materials in analysis of 25 trials with 28,189 adults ($p < 0.00001$, NNT 56)
 - no significant difference in long-term abstinence compared to control when self-help materials used with nicotine replacement therapy, additional written materials or videos or when both groups had face-to-face contact
 - Reference – [Cochrane Database Syst Rev 2009 Apr 15;\(2\):CD001118](#)
- **self-help booklets had little to no effect in pregnant smokers**
 - 1,527 women who smoked at start of pregnancy were randomized to receive self-help booklets (1 by midwife on enrollment and 4 subsequent booklets by mail) vs. no intervention
 - cotinine-confirmed smoking cessation rates at end of second trimester were 18.8% vs. 20.7% (95% CI for difference ranged from -3.5% to +7.3%)
 - Reference – [BMJ 2002 Dec 14;325\(7377\):1383](#), commentary can be found in [BMJ 2003 Feb 22;326\(7386\):446](#), [Am Fam Physician 2003 Apr 15;67\(8\):1811](#)

Comparisons of self-help materials:

- **individualized self-help materials appear more effective than untailored self-help materials ([level 2 \[mid-level\] evidence](#))**
 - based on randomized trial without reporting of intention-to-treat analysis
 - 3,627 smokers using nicotine polacrilex gum randomized to computer-tailored self-help materials vs. tailored materials plus 1 follow-up telephone call by counselor vs. untailored materials
 - no significant difference in abstinence rates between two groups receiving tailored materials and final abstinence rate for group receiving telephone support not reported
 - abstinence rates at 12 weeks 32.3% for group receiving tailored materials vs. 18.9% for group receiving usual care ($p < 0.001$, NNT 8)
 - Reference – [Arch Intern Med 2000 Jun 12;160\(11\):1675 full-text](#)

▶ [Group Counseling and Social Support](#)

Group smoking cessation programs:

- **group therapy may be more effective than self-help programs ([level 2 \[mid-level\] evidence](#))**
 - based on Cochrane review of trials with unclear randomization or allocation concealment
 - systematic review of 53 randomized trials evaluating group behavior therapy programs for smoking cessation
 - most trials provided insufficient detail about randomization and allocation concealment
 - smoking cessation rates comparing group therapy vs. control
 - 10.5% with group therapy vs. 5.8% with self-help program in analysis of 13 trials with 4,375 patients ($p < 0.00001$, NNT 22)
 - 19.4% with group therapy vs. 6.5% with no intervention in analysis of 8 trials with 1,040 patients ($p = 0.00001$, NNT 8), results limited by significant heterogeneity ($p = 0.02$)
 - limited evidence that addition of group therapy to other treatments is beneficial
 - insufficient evidence to compare group programs to intensive individual counseling
 - Reference – [Cochrane Database Syst Rev 2009 Jan 21;\(1\):CD001007](#)
- **formal group smoking cessation programs may reduce long-term mortality ([level 2 \[mid-level\] evidence](#))**
 - based on randomized trial with low long-term follow-up rate
 - follow-up from Lung Health Study for up to 14.5 years
 - 5,887 middle-aged volunteers with asymptomatic airway obstruction randomized to intensive 10-week smoking cessation intervention (strong physician message, 12 two-hour group sessions using behavior modification, and nicotine gum; quitters entered maintenance program that stressed coping skills) with ipratropium inhaler vs. same intervention with placebo inhaler vs. usual care
 - about 75% participants followed for 10–12 years
 - comparing smoking cessation intervention groups (both combined) vs. usual care group

- sustained smoking cessation at 5 years in 21.7% vs. 5.4% ($p < 0.001$, NNT 7)
 - after up to 14.5 years of follow-up, all-cause mortality was 11.75% vs. 13.75% (NNT 50) or 8.83 vs. 10.38 per 1,000 person-years ($p = 0.03$) in intention-to-treat analysis
 - Reference – [Ann Intern Med 2005 Feb 15;142\(4\):233](#), commentary can be found in [Ann Intern Med 2005 Feb 15;142\(4\):299](#), [ACP J Club 2005 Sep-Oct;143\(2\):41](#), [Ann Intern Med 2005 Oct 18;143\(8\):614](#), [615](#), [Am Fam Physician 2005 Nov 1;72\(9\):1836](#)
- **group behavioral activation therapy may be more effective for smoking cessation in patients with depressive symptoms than standard group therapy (level 2 [mid-level] evidence)**
 - based on randomized trial with $> 50\%$ dropout in both study arms
 - 68 adult smokers with depressive symptoms but not reaching criteria for major depressive disorder were randomized to group behavioral activation therapy for 30 minute sessions vs. usual care for 8 weeks
 - usual care consisted of nicotine replacement therapy and standard group therapy intervention
 - behavioral activation therapy encourages greater contact with more valued environments and increase enjoyment of daily activities
 - behavioral activation group associated with greater smoking abstinence and reduction in depressive symptoms at 26 weeks ($p = 0.02$)
 - Reference – [J Consult Clin Psychol 2010 Feb;78\(1\):55](#)
- **group cognitive behavioral therapy (CBT) may promote smoking cessation in African American smokers (level 2 [mid-level] evidence)**
 - based on randomized trial with high dropout rate
 - 154 African American patients who were interested in quitting smoking were randomized to group cognitive behavioral therapy vs. general health education for 6 sessions along with 8 weeks of transdermal nicotine patches and followed for 6 months
 - 59% completed all aspects of study
 - 7 day point-prevalence abstinence comparing CBT vs. health education
 - at end of counseling 51% vs. 27% ($p < 0.003$, NNT 5)
 - at 3 months 34% vs. 20% ($p < 0.047$, NNT 8)
 - at 6 months 31% vs. 14% ($p < 0.014$, NNT 6)

- Reference – [J Consult Clin Psychol 2010 Feb;78\(1\):24](#)

Social support:

- **interventions designed to enhance partner support for smokers in cessation programs do not appear to increase quit rates or partner support ([level 2 \[mid-level\] evidence](#))**
 - based on Cochrane review of trials with unclear allocation concealment
 - systematic review of 11 randomized trials (10 reports) comparing interventions with partner support vs. interventions alone with > 2,000 patients
 - all trials had unclear allocation concealment
 - no difference in self-reported abstinence up to 12 months post-treatment
 - only 2 of 6 trials reported significant increase in partner support with intervention
 - Reference – [Cochrane Database Syst Rev 2008 Jul 16;\(3\):CD002928](#), earlier version published in [Ann Fam Med 2004 Mar-Apr;2\(2\):170 full-text](#)
- **increasing behavioral support (from 3 to 6 contacts) for patients starting nicotine replacement therapy not associated with higher smoking cessation rates ([level 2 \[mid-level\] evidence](#))**
 - based on randomized trial with low (69%) follow-up rate
 - 925 smokers of ≥ 10 cigarettes/day randomized to weekly vs. basic support
 - all participants were telephoned around quit day and seen 1 and 4 weeks after initial appointment and given nicotine patches 15 mg/16 hour
 - weekly support group also received telephone calls 10 days and 3 weeks after initial appointment and visit at 2 weeks
 - no significant differences in quit rates comparing intensive behavioral support vs. basic support
 - 4 weeks 22.4% vs. 22.4%
 - 12 weeks 11.4% vs. 14.1%
 - 26 weeks 8.8% vs. 10.7%
 - 52 weeks 6.6% vs. 7.7%
 - Reference – [Thorax 2007 Oct;62\(10\):898](#)

- **buddy support may increase chance of short-term abstinence**([level 2 \[mid-level\] evidence](#))
 - based on randomized trial with allocation concealment not stated
 - 172 smokers attending a 3-session smoking cessation clinic were randomized to “quitting buddy” vs. usual care
 - 27% abstinent in “quitting buddy” group at 4 weeks after quit date vs. 12% receiving usual care (NNT 7)
 - Reference – [Addiction 1998 Jul;93\(7\):1007](#)
- **family-based or couple-based interventions for risk factor reduction may be more successful if both partners quit at the same time** ([level 2 \[mid-level\] evidence](#))
 - based on subgroup analysis of cohort in randomized trial
 - 489 couples aged 40–59 years in which at least 1 member smoked were included in study of 1,477 couples randomized to family-center lifestyle program intended to reduce multiple modifiable risk factors for cardiac disease were followed for 1 year
 - 72% of couples available for follow-up
 - of smokers living with other smokers, at baseline, 12% quit at end of follow-up vs. 19% of smokers not living with smoker at baseline ($p = 0.03$)
 - quit rates in men 63% if partners also quit vs. 11% if partner had not
 - quit rates for women 31% if partner had also quit vs. 3% if partner had not
 - Reference – [Arch Fam Med 1997 Jul-Aug;6\(4\):354 PDF](#)

▶ [Additional Counseling Information](#)

Smokeless tobacco users:

- **behavioral interventions including telephone counselling may increase abstinence rates in smokeless tobacco users** ([level 2 \[mid-level\] evidence](#))
 - based on Cochrane review with results from post hoc analyses
 - systematic review of randomized trials evaluating behavioral or pharmacological interventions for smokeless tobacco use cessation with ≥ 6 months follow-up
 - range of behavioral interventions examined included
 - general education through web-based, video or print materials

- group counseling sessions
 - telephone counseling
 - oral exams in conjunction with professional advice
 - varenicline significantly increased abstinence rate in 1 placebo-controlled trial with 431 Swedish snus users
 - no significant benefit found with [bupropion](#) sustained-release in 2 placebo-controlled trials or nicotine replacement therapy (patch, gum, or lozenge) in 8 placebo-controlled trials
 - 14 trials of behavioral interventions limited by statistical heterogeneity
 - 7 trials showed significant benefits with intervention
 - in post hoc subgroup analysis, behavioral interventions that included telephone counselling may increase abstinence rates
 - Reference – [Cochrane Database Syst Rev 2011 Feb 16;\(2\):CD004306](#)
- **interventions for tobacco use conducted by oral health professionals may increase tobacco abstinence rates among smokeless tobacco users ([level 2 \[mid-level\] evidence](#))**
 - based on Cochrane review limited by heterogeneity
 - systematic review of 6 randomized or pseudo-randomized trials with follow-up at least 6 months
 - 5 trials limited to smokeless tobacco users
 - all interventions studied included behavioral interventions and oral examination
 - intervention associated with increased tobacco abstinence rates > 12 months compared to controls (odds ratio 1.44, 95% CI 1.16–1.78)
 - heterogeneity not explained in subgroup analyses
 - Reference – systematic review last updated 2005 Nov 3 ([Cochrane Library 2006 Issue 1:CD005084](#))

Tobacco cessation in other addictions:

- **smoking cessation interventions provided during treatment for other addictions not associated with smoking cessation \geq 6 months after treatment ([level 2 \[mid-level\] evidence](#))**
 - based on systematic review of trials with high loss to follow-up

- systematic review of 19 randomized trials of smoking cessation interventions in persons in current addiction treatment or recovery program
- loss to follow-up rate ranged from 0–73% across trials with mean attrition rate 21%
- interventions associated with increased smoking cessation immediately post-treatment (relative risk [RR] 2.03, 95% CI 1.21–3.39)
- interventions not associated with improvement at follow-up \geq 6 months (RR 1.18, 95% CI 0.89–1.56)
- smoking cessation interventions associated with increased likelihood of long-term abstinence from alcohol and illicit drugs
- Reference – [J Consult Clin Psychol 2004 Dec;72\(6\):1144](#)
- **addition of brief alcohol intervention with smoking cessation program does not appear to improve smoking cessation for heavy drinkers seeking smoking cessation ([level 2 \[mid-level\] evidence](#))**
 - based on quasi-randomized trial
 - 119 patients seeking smoking cessation with history of heavy drinking given 8 weeks of nicotine replacement therapy and randomized to 4 session standard smoking cessation program vs. standard cessation program incorporated with brief alcohol intervention and followed for 26 weeks
 - greater smoking abstinence at 2 weeks but not 16 weeks for smoking plus brief alcohol intervention group
 - Reference – [J Consult Clin Psychol 2008 Oct;76\(5\):852](#)
- counseling strategies for smoking cessation in recovering alcoholics can be found in [Am Fam Physician 1998 Apr 15;57\(8\):1869](#)

Training health professionals:

- **insufficient evidence to support training health professionals to provide smoking cessation interventions**
 - based on Cochrane review
 - systematic review of 8 trials found measurable effect on professional performance but no strong evidence for effect on patient outcomes such as smoking cessation
 - Reference – systematic review of 8 trials last updated 2000 May 31 ([Cochrane Library 2000 Issue 3:CD000214](#))

Additional considerations:

- **communicating DNA-based disease risk estimates does not appear to improve smoking cessation ([level 2 \[mid-level\] evidence](#))**
 - based on Cochrane review with inadequate power to rule out possible benefit
 - systematic review included 5 randomized and quasi-randomized trials evaluating effects of communicating DNA-based disease risk estimates on smoking behavior in adults
 - Reference – [Cochrane Database Syst Rev 2010 Oct 6;\(10\):CD007275](#)
- **multiple behavior change counseling does not appear effective in primary care setting ([level 2 \[mid-level\] evidence](#))**
 - based on randomized trial with > 20% dropout rate
 - 289 African American adults aged 45–64 years presenting at primary care clinic were randomized to 1 of 3 behavior modification counseling conditions
 - simultaneous counseling defined as 1 in-clinic session for all 3 behavior changes every 6 months plus motivational interviewing by telephone every 18 months
 - sequential counseling defined as similar protocol addressing a new behavior every 6 months
 - usual care defined as 1-time referral to existing group classes
 - behavioral goals defined as
 - smoking cessation
 - dietary sodium level < 100 mEq/L (100 mmol/L)
 - increase of physical activity by > 10,000 pedometer steps weekly
 - 79.6% completed follow-up
 - low rates of meeting at least 2 behavioral criteria at 18 months
 - 6.5% with simultaneous counseling
 - 5.2% with sequential counseling
 - 6.5% with 1-time referral
 - Reference – [Arch Intern Med 2007 Jun 11;167\(11\):1152](#)
- **culturally adapted smoking cessation intervention in combination with nicotine replacement therapy may have short-term benefit for Chinese and Korean American smokers ([level 2 \[mid-level\] evidence](#))**

- based on small randomized trial
- 66 Chinese and Korean American smokers were randomized to theory-based smoking cessation intervention in native language vs. general health counseling
- both groups received nicotine replacement therapy
- comparing intervention vs health counseling
 - 52.6% vs. 23.5% Chinese participants stopped smoking at 1 month
 - 60% vs. 40% Korean participants stopped smoking at 1 month
 - no differences at 3-month follow-up
- Reference – [Prev Med 2006 Oct;43\(4\):321](#)

▶ [References including Reviews and Guidelines](#)

General references used:

- 1. Fiore MC, Jaen CR, Baker TB, et al; United States Department of Health and Human Services, Public Health Service. Clinical practice guideline: Treating tobacco use and dependence: 2008 update. [DHHS 2008 May PDF](#) or at [National Guideline Clearinghouse 2008 May 12:12520](#), endorsed by American Academy of Pediatrics ([Pediatrics 2008 Aug;122\(2\):471](#))
 - Public Health Service (PHS) guideline panel Strength of Evidence ratings
 - Strength of Evidence A – multiple well-designed randomized clinical trials, directly relevant to the recommendation, yielded a consistent pattern of findings
 - Strength of Evidence B – some evidence from randomized clinical trials supported the recommendation, but the scientific support was not optimal (for example, few randomized trials existed or trials that did exist were somewhat inconsistent or trials were not directly relevant to recommendation)
 - Strength of Evidence C – reserved for important clinical situations in which Panel achieved consensus on recommendation in the absence of relevant randomized controlled trials

Reviews:

- review of realistic approaches to counseling in office setting can be found in [Am Fam Physician 2009 Feb 15;79\(4\):277 full-text](#)
- review can be found in [CMAJ 2007 Nov 20;177\(11\):1373 full-text](#), correction can be found in [CMAJ 2008 Mar 11;178\(6\):732](#)
- review of assessing dependence and motivation to stop smoking can be found in [BMJ 2004 Feb 7;328\(7435\):338](#)
- review can be found in [N Engl J Med 2002 Feb 14;346\(7\):506](#), commentary can be found in [N Engl J Med 2002 Jul 25;347\(4\):294](#)
- NIH Consensus Conference 2006 Jun 12–14 on tobacco use can be found in [NIH Consens State Sci Statements 2006 Jun 12–14;23\(3\):1](#) or at [National Guideline Clearinghouse 2009 Mar 23;11828](#) or in [Ann Intern Med 2006 Dec 5;145\(11\):839](#), supporting systematic review in [AHRQ Evidence Report on Tobacco Use: Prevention, Cessation and Control 2006 Jun:140](#) or in [Ann Intern Med 2006 Dec 5;145\(11\):845](#)
- review of tobacco addiction can be found in [Lancet 2008 Jun 14;371\(9629\):2027](#), editorial can be found in [Lancet 2008 Jun 14;371\(9629\):1976](#), commentary can be found in [Lancet 2008 Oct 4;372\(9645\):1217](#)
- review of management of smokers can be found in [JAMA 2005 Jul 27;294\(4\):482](#), commentary can be found in [JAMA 2005 Nov 16;294\(19\):2434](#)
- review of treatment of tobacco dependence can be found in [Mayo Clin Proc 2008 Apr;83\(4\):479](#)
- review of smoking cessation tactics can be found in [J Fam Pract 2007 Oct;56\(10\):817](#)
- review of evidence based approach to managing smoking cessation in primary care can be found in [Aust Fam Physician 2008 Jan-Feb;37\(1-2\):10](#)
- systematic review of smoking cessation pharmacotherapy can be found in [BMC Public Health 2006 Dec 11;6:300 full-text](#)
- brief “What you should do” review on smoking cessation can be found in [BMJ 2008 Jan 26;336\(7637\):217](#)
- review of interventions to facilitate smoking cessation can be found in [Am Fam Physician 2006 Jul 15;74\(2\):262 full-text](#), commentary can be found in [Am Fam Physician 2007 Apr 15;75\(8\):1151 full-text](#)
- review of smoking cessation can be found in [BMJ 2007 Jul 7;335\(7609\):37](#), commentary can be found in [BMJ 2007 Jul 21;335\(7611\):112](#)

- review of brief advice and behavioral support can be found in [BMJ 2004 Feb 14;328\(7436\):397](#)
- review of cessation of smokeless tobacco use can be found in [J Fam Pract 2008 Apr;57\(4\):238](#)
- review of Cochrane reviews can be found in [BMJ 2000 Aug 5;321\(7257\):355](#), editorial can be found in [BMJ 2000 Aug 5;321\(7257\):311](#), commentary can be found in [BMJ 2001 Jan 6;322\(7277\):52](#), commentary can be found in ACP J Club 2001 Mar–Apr;134(2):60
- review of smoking cessation for prevention and treatment of COPD can be found in [BMJ 2006 Jun 3;332\(7553\):1324](#)
- review of youth tobacco use can be found in [Pediatrics 2006 Sep;118\(3\):e890](#)
- review of reducing tobacco use in adolescents can be found in [Am Fam Physician 2008 Feb 15;77\(4\):483](#)
- review of nicotine replacement therapy can be found in [BMJ 2004 Feb 21;328\(7437\):454](#), correction can be found in [BMJ 2004 Mar 20;328\(7441\):686](#)
- review of cessation interventions in routine health care can be found in [BMJ 2004 Mar 13;328\(7440\):631](#)
- review of parental tobacco control (interventions in child health care setting) can be found in [Pediatrics 2005 Mar;115\(3\):750](#)
- review of preoperative smoking cessation can be found in [Mayo Clin Proc 2005 Feb;80\(2\):252](#)
- review of smoking cessation in pregnancy and postpartum relapse prevention can be found in [J Am Board Fam Pract 2004 Jul–Aug;17\(4\):264 full-text](#)

Guidelines:

- United States Public Health Service clinical practice guideline for treating tobacco use and dependence [2008 May PDF](#) or at [National Guideline Clearinghouse 2008 May](#), endorsed by American Academy of Pediatrics (AAP) ([Pediatrics 2008 Aug;122\(2\):471](#))
- National Institute for Health and Clinical Excellence (NICE) public health guidance on smoking cessation services can be found at [NICE 2008 Feb:PH10](#) or at [National Guideline Clearinghouse 2008 Jul 7:12286](#)
- NICE public health guidance on brief interventions and referral for smoking cessation in primary care and other settings can be found at [NICE 2006 Mar:PH1](#) or at [National Guideline Clearinghouse 2007 Feb 26:9740](#)

- NICE public health guidance on preventing uptake of smoking by children and young people can be found at [NICE 2008 Jul:PH14](#)
- Institute for Clinical Systems Improvement (ICSI) guideline on primary prevention of chronic disease risk factors can be found at [ICSI 2010 May PDF](#) or at [National Guideline Clearinghouse 2010 Dec 27:23859](#)
- Michigan Quality Improvement Consortium (MQIC) guideline on tobacco control can be found at [National Guideline Clearinghouse 2010 Apr 26:15338](#)
- AAP policy statement on tobacco use: a pediatric disease can be found in [Pediatrics 2009 Nov;124\(5\):1474](#)
- AAP technical report on secondhand and prenatal tobacco smoke exposure can be found in [Pediatrics 2009 Nov;124\(5\):e1017](#)
- AAP technical report on tobacco as a substance of abuse can be found in [Pediatrics 2009 Nov;124\(5\):e1045](#)
- American Academy of Pediatric Dentistry policy on tobacco use 2003 [PDF](#)
- NICE public health guidance on school-based interventions to prevent smoking can be found at [NICE 2010 Feb:PH23](#)
- NICE public health on workplace smoking can be found at [NICE 2007 Apr:PH15](#) or at [National Guideline Clearinghouse 2009 Mar 30:13254](#)
- Registered Nurses Association of Ontario (RNAO) guideline on integrating smoking cessation into daily nursing practice can be found at [National Guideline Clearinghouse 2008 Mar 24:11503](#)
 - [TobaccoFreeNurses](#) provides free guide for nurses and students nurses to help smokers quit ([AHRQ Research Activities 2005 May;297:27](#))
- American College of Obstetricians and Gynecologists (ACOG) Committee Opinion 471 on smoking cessation during pregnancy can be found in [Obstet Gynecol 2010 Nov;116\(5\):1241](#), commentary can be found in [ACOG News Release 2010 Oct 21](#)
- New York State Department of Health guidelines on smoking cessation in HIV-infected patients can be found at [National Guideline Clearinghouse 2008 Jun 23:12564](#)
- policy statement on smoking and diabetes from American Diabetes Association (ADA) can be found in [Diabetes Care 2004 Jan;27 Suppl 1:S74 full-text](#)

- Substance Abuse and Mental Health Services Administration (SAMHSA) guideline on physical detoxification services for withdrawal from specific substances can be found at [National Guideline Clearinghouse 2006 Aug 7:9118](#)
- see [Substance use disorders](#) for general substance use guidelines

▶ [Patient Information](#)

Patient information:

- support from [Smokefree.gov](#)
- online support for smoking cessation in United Kingdom can be found at [Smokefree from NHS](#)
- handouts can be found in [Am Fam Physician 2002 Nov 1;66\(9\):1754, 1751](#)
- handout on "Do I want to quit?" can be found in [Am Fam Physician 2002 Nov 1;66\(9\):1747](#)
- handout on quitting smoking can be found in [Am Fam Physician 2002 Mar 15;65\(6\):1117](#)
- handout on tobacco use in adolescents can be found in [Am Fam Physician 2008 Feb 15;77\(4\):491](#)
- handout that provides assessment of readiness to quit and identification of smoking triggers can be found in [Am Fam Physician 2000 Aug 1;62\(3\):591](#)
- handout on smoking cessation can be found in [Am Fam Physician 2000 Sep 15;62\(6\):1419](#)
- handout on cessation of smokeless tobacco can be found in [Am Fam Physician 2000 Sep 15;62\(6\):1427](#)
- handout on smoking cessation in recovering alcoholics from [American Academy of Family Physicians](#) or in [Am Fam Physician 2000 Mar 15;61\(6\):1895](#)
- comprehensive Web site which offers free services of reminder E-mails and other interactive methods to assist smoking cessation can be found at [QuitNet](#)
- handout on tips to help you quit smoking can be found in [Am Fam Physician 2006 Jul 15;74\(2\):276](#)
- support materials for tobacco prevention and cessation from [American Academy of Family Physicians](#)

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