


Smoking cessation interventions

▶ Intervention in brief

System wide:	Smoking cessation interventions include a range of strategies (behavioral, pharmacological, and psychosocial) to help patients quit smoking. The goal is to reduce the immediate and downstream negative impacts of smoking on health.
Strength of evidence	 <p>High</p> <p>Interventions are successful at increasing patient quit rates, but programs are not tied with strong financial ROI or improved clinical outcomes (aside from neonatal outcomes).</p>
Impact	<ul style="list-style-type: none"> • Decreased cost (wide range): 1.30-1.90 benefit-cost ratio; \$15-44M savings over ten years; \$43-739 lifetime cost savings per person; incremental cost effective ratio of \$428 per QALY¹ • Decreased utilization: 22% reduced NICU admissions • Improved quality, clinical outcomes (wide range): <ul style="list-style-type: none"> • <i>Decreased smoking prevalence:</i> 2-5.5 percentage points fewer smokers in population • <i>Increased smoking cessation:</i> 33-298% increased likelihood of smoking cessation <ul style="list-style-type: none"> • Due to pharmacotherapy only (62-298%, increased odds 65-74%) • Due to counseling plus pharmacotherapy (82%) • Due to counseling only (33-76%) • Due to nicotine replacement therapy (60-65%) • <i>Increased smoking abstinence:</i> 33-120% increased likelihood of smoking abstinence at 6-18 months post-partum or post-intervention • <i>Improved neonatal outcomes:</i> 35% decreased late pregnancy smoking; 17% reduced low birth weight; 0.56g increased birthweight • <i>Decreased smoking-related fatalities:</i> 1.07-2.65 fatalities per 100 people • <i>Increased QALYs:</i> 0.10-.41 QALY per person • Increased access: None • Improved stakeholder satisfaction: None
How to succeed	<p>To build an effective smoking cessation program:</p> <ul style="list-style-type: none"> • Take a multipronged approach, moving beyond telephonic help lines (often called “quit lines”) to include multiple strategies: <ul style="list-style-type: none"> • Include pharmacological interventions because, when done in isolation, medication is more effective than nicotine replacement therapy and counseling • Offer tobacco cessation counseling, whether conducted by physicians, nurses, or other trained non-physician practitioners, in a group or individualized setting. Counseling is reimbursable under Medicare and Medicaid.² • Ensure pregnant women receive smoking cessation counseling, as evidence shows clear ties between cessation counseling and improved infant health outcomes <p>To learn more about developing an evidence-based approach, check out our Smoking Cessation Resource Compendium here.</p>

1) Quality-Adjusted Life Year.

2) All state Medicaid programs are required to cover smoking cessation counseling for pregnant women, but coverage for other populations is decided on the state level.

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► Demonstrated impact

Literature review summary

Title: Cost-Effectiveness of Smoking Cessation Treatment Initiated during Psychiatric Hospitalization: Analysis from a Randomized, Controlled Trial

Publication: Journal of Clinical Psychiatry

Date: 2015

Type: Randomized controlled trial

Study population: 223 mostly white, male, never-married, unemployed inpatient adult smokers on a smoke-free unit at Langley Porter Psychiatric Institute at University of California-San Francisco. On average, patients were 40 years old, had smoked for 20 years, and had at least one psychiatric diagnosis, including disorders on the schizophrenia spectrum, bi- and unipolar depression, comorbid alcohol or drug problems, and more.

Major findings: Patients receiving computer-assisted support with personalized feedback during their hospital stay and at three and six months post-discharge had 64% higher abstinence rates at follow-up (12 or 18 months) compared to control. The intervention had an incremental cost-effectiveness ratio of \$428 per QALY, including an additional \$43 in lifetime cost and an increase in 0.10 QALY.

Source: Full article [here](#).

Title: Economic Impact of Financial Incentives and Mailing Nicotine Patches to Help Medicaid Smokers Quit Smoking: A Cost-Benefit Analysis

Publication: American Journal of Preventive Medicine

Date: 2018

Type: Simulated cohort study

Study population: 478,3000 Medicaid patients who were active smokers and used a smoking quit line

Major findings: Offering moderate financial incentives in addition to mailing nicotine patches and offering quinine support to patients resulted in a:

- Benefit-cost ratio of 1.90 compared to quit line support only
- Benefit-cost ratio of 1.30 compared to quit line support plus mailing nicotine patches

This is the equivalent of \$44 million and \$15 million in cost savings over ten years.

Source: Full article [here](#).

Title: Health Benefits and Cost-Effectiveness of Brief Clinician Tobacco Counseling for Youth and Adults

Publication: Annals of Family Medicine

Date: 2017

Type: Prospective analysis

Study population: 4,000,000 youth (age 8-25 years old) and adults representative of sex and ethnicity trends of the U.S. simulated to receive or not receive tobacco cessation counseling consistent with recommendations from the U.S. Preventive Services Task Force

Major findings: Compared to no counseling, simulated tobacco cessation counseling improved quality outcomes when provided during youth only, during adulthood only, and when provided during both youth and adulthood:

- Decreased net costs per person across their lifetime (\$225, \$580, \$739 per person, respectively)
- Decreased smoking-attributable fatalities (1.07, 1.75, 2.65 per 100 people, respectively)
- Increased QALYs (0.19, 0.26, 0.41 per person, respectively)
- Decreased smoking prevalence (2 percentage points, 3.8 percentage points, 5.5 percentage points fewer smokers in the population, respectively)

Source: Full article [here](#).

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Title: Psychosocial Interventions for Supporting Women to Stop Smoking in Pregnancy

Publication: Cochrane Database of Systematic Reviews

Date: 2017

Type: Systematic review

Study population: 28,000 pregnant women who participated in any of 102 randomized controlled trials

Major findings: Mixed-method psychosocial interventions (e.g., some combination of counseling, health education, feedback, incentives, social support, exercise, and information dissemination) and interventions focusing solely on counseling resulted in:

- Combined interventions:
 - *Utilization:* Reduced NICU admissions (22%)
 - *Clinical, quality outcomes:*
 - Reduced incidence of late pregnancy smoking (35%)
 - Reduced incidence of low birthweight infants (17%)
 - Increased average birthweight (0.56g)
- Counseling only: Higher likelihood for post-partum abstinence (44%), including higher likelihood at 0-5 months (59%), at 6-11 months (33%), and at 12-17 months post-partum (120%)

Other interventions showed inconclusive results or have moderate-to-low-quality supporting evidence when used alone.

Source: Full article [here](#).

Title: Behavioral Counseling and Pharmacotherapy Interventions for Tobacco Cessation in Adults, Including Pregnant Women: A Review of Reviews for the U.S. Preventive Services Task Force

Publication: Annals of Family Medicine

Date: 2015

Type: Systematic review

Study population: 54 systematic reviews analyzing studies about behavioral and pharmacotherapy treatments for smoking adults, including pregnant women

Major findings: Systematic reviews analyzed the impact of behavioral and pharmacological interventions on smoking cessation at six months post-intervention. They found:

- 62-127% higher likelihood for cessation with pharmacotherapy
- 82% higher likelihood for cessation with combined behavioral and pharmacotherapy
- 76% higher likelihood for cessation with physician counseling only
- 60% higher likelihood for cessation with nicotine replacement therapy

Source: Full article [here](#).

Title: Pharmacological Interventions for Smoking Cessation: An Overview and Network Meta-Analysis

Publication: Cochrane Database of Systematic Reviews

Date: 2013

Type: Meta-analysis

Study population: 101,804 mostly adult smokers who participated in 267 randomized controlled trials included in 12 reviews analyzing pharmacological smoking cessation interventions for non-pregnant adult smokers

Major findings: Studies examined the impact of different pharmacological treatments on smoking cessation and found increased likelihood of cessation in nearly all interventions:

- Higher likelihood of cessation using medication (65-74% higher odds, 63-298%¹ higher risk)
- Higher likelihood of cessation using nicotine replacement therapy (65%)

Source: Full article [here](#).

1) 63% higher likelihood of cessation using clonidine, but increased likelihood of experiencing an adverse event.

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Appendix

- Barnett PG, et al., “Cost-Effectiveness of Smoking Cessation Treatment Initiated During Psychiatric Hospitalization: Analysis from a Randomized, Controlled Trial,” *Journal of Clinical Psychiatry*, 76, no. 10 (2015): e1285-e1291, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4988964/>.
- Sung H, et al., “Economic Impact of Financial Incentives and Mailing Nicotine Patches to Help Medicaid Smokers Quit Smoking,” *American Journal of Preventative Medicine*, 55, no.6 (2018): S148-S158, [https://www.ajpmonline.org/article/S0749-3797\(18\)32172-X/fulltext](https://www.ajpmonline.org/article/S0749-3797(18)32172-X/fulltext).
- Maciosek MV, et al., “Health Benefits and Cost-Effectiveness of Brief Clinician Tobacco Counseling for Youth and Adults,” *Annals of Family Medicine*, 15, no. 1 (2017): 37-47, <http://www.annfammed.org/content/15/1/37.full>.
- Chamberlain C, et al., “Psychosocial Interventions for Supporting Women to Stop Smoking in Pregnancy,” *Cochrane Database of Systematic Reviews*, 2 (2017), <https://www.cochranelibrary.com/cdsr/doi/10.1002/14651858.CD001055.pub5/full>.
- Patnode C, et al., “Behavioral Counseling and Pharmacotherapy Interventions for Tobacco Cessation in Adults, Including Pregnant Women: A Review of Reviews for the U.S. Preventive Services Task Force,” *Annals of Family Medicine*, 163, no. 8 (2015): 608-621, <https://annals.org/aim/fullarticle/2443059/behavioral-counseling-pharmacotherapy-interventions-tobacco-cessation-adults-including-pregnant-women>.
- Cahill K, et al., “Pharmacological Interventions for Smoking Cessation: An Overview and Network Meta-Analysis,” *Cochrane Database of Systematic Reviews*, 5 (2013), <https://www.cochranelibrary.com/cdsr/doi/10.1002/14651858.CD009329.pub2/full>.