**Smoking Cessation Return on Investment (ROI): Updated 11/26/2023**

Calculation of an accurate ROI for smoking cessation is more complex than merely showing the differences in cost between smokers and non-smokers health care costs. Disease progression for many conditions after smoking cessation is slowed over time, and for those who have no disease manifest, the avoidance of future cost cannot be estimated. For some conditions, such as cardiovascular disease or pre-mature birth the value of avoided medical cost is readily apparent in the first year. For other conditions, like COPD, lung cancer, pneumonia, and sinusitis, savings will continue to accrue over time.

Health plans have had difficulty calculating ROI because smoking cessation is a complex event spanning several years. There is no medical coding that documents a quit date, and the process smoking cessation. The only indicator of cessation is a quit attempt based on medical and pharmacy claims. Calculation of future benefits is further complication by member turnover.

Systematic Reviews of ROI models describe several approaches, but most models focus on QALYs.

<https://journals.sagepub.com/doi/full/10.4137/TUI.S15628> <https://onlinelibrary.wiley.com/doi/full/10.1111/add.13748> <https://tobaccocontrol.bmj.com/content/30/4/460.abstract>

Among the articles the focus on medical cost savings, the most frequently cited is Warner KE, Smith RJ, Smith DG, Fries BE. Health and economic implications of a work-site smoking-cessation program: a simulation analysis. [Health and economic implications of a work-site smoking-cessation program: a simulation analysis - PubMed (nih.gov)](https://pubmed.ncbi.nlm.nih.gov/8899574/) which concludes “…smoking cessation is a very sound economic investment for the firm, and is particularly profitable when long-term benefits are included, with an eventual benefit-cost ratio of 8.75”.

A useful study from the health plan perspective is [The Return on Investment of a Medicaid Tobacco Cessation Program in Massachusetts (plos.org)](https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0029665). West and Ku measured the cost-effectiveness of a statewide smoking cessation initiative at 13 months by review of cardiac hospital admissions. Every $1 in investment resulted in a $3.12 saving in reduced hospital costs in the first year. As other tobacco-related expenses were not measured and additional benefits might accrue over time, the real savings should be substantially higher. No other paper has the same broad applicability, and it is my recommendation that 3:1 be adopted as a standard for ROI modelling.

A ten-year review of Washington State’s Tobacco control program reported an ROI of over five to one.

[Program, policy, and price interventions for tobacco control: quantifying the return on investment of a state tobacco control program - PubMed (nih.gov)](https://pubmed.ncbi.nlm.nih.gov/22390458/)

Tobacco Free Kids has assembled data in reporting on other states Tobacco control programs ROI which approach and ROI of ten to one.

https://www.tobaccofreekids.org/assets/factsheets/0370.pdf

Minnesota Cessation reports that employers program expenditures can be fully offset in three years: <https://www.health.state.mn.us/communities/tobacco/initiatives/docs/cessation.pdf>

Other useful citations include:

Smoking cessation cost effectiveness

A new study advances our understanding of the cost-effectiveness of smoking cessation. Although the long-term value economic value of quitting cigarettes has been well established, health plans and accountable care organizations have not pushed for implementation of systems based interventions for tobacco cessation. In this study conducted in an HMO population, a systematic approach to identify and refer smokers using the electronic medical record system to tobacco treatment specialists resulted in a fivefold increase in the quit rate. In order to calculate the net savings, physician costs, salaries of the tobacco treatment specialists, program costs and medication cost were deducted from the difference in medical expense. The HMO showed a net savings of $42 PMPM. One can anticipate that this cohort of former smokers will have even lower medical costs in future years.

[Cost-Effectiveness of a Comprehensive Primary Care Smoking Treatment Program - PubMed (nih.gov)](https://pubmed.ncbi.nlm.nih.gov/37844710/)

Cigarette smoking generates substantial smoking attributable healthcare expenditures and lost productivity. These expenditures affect the smoker specifically and society generally. The evidence from economic evaluations that focus on the cost-effectiveness of smoking cessation interventions demonstrates that such interventions are cost-effective from various perspectives. Taken together, the scientific evidence on the health and cost benefits of smoking cessation interventions indicates that these interventions should be implemented as widely as possible throughout the healthcare system and supported more broadly by population-level tobacco control measures. [Smoking Cessation: A Report of the Surgeon General, 2020 (cdc.gov)](https://www.cdc.gov/tobacco/data_statistics/sgr/2020-smoking-cessation/pdfs/2020-cessation-sgr-chapter-5-508c.pdf)

Smoking cessation has been called the ‘gold standard’ of healthcare cost effectiveness, producing additional years of life at costs that are well below those estimated for a wide range of healthcare interventions.” Ken Warner, Dean of the School of Public Health at the University of Michigan. [Cost effectiveness of smoking-cessation therapies. Interpretation of the evidence-and implications for coverage - PubMed (nih.gov)](https://pubmed.ncbi.nlm.nih.gov/10168094/)

Studies have documented that tobacco dependence treatments provide a timely return on investment when considered by the employer…Financial savings are more difficult to attain for a health plan given factors such as member turnover, the difficulty of attributing reduced health care expenditures to tobacco dependence, and the absence of economic benefits resulting from productivity gains. One recent effort to simulate the financial implications of covering tobacco use treatments by managed care organizations found that at five years, coverage of tobacco use treatment cost an MCO a modest $0.61 PMPM, with quitters gaining an average of 7.1 years of life and a direct coverage cost of about $3,500 for each life-year saved. [Systems Change: Treating Tobacco Use and Dependence | Agency for Healthcare Research and Quality (ahrq.gov)](https://www.ahrq.gov/prevention/guidelines/tobacco/decisionmakers/systems/index.html)

**Changes in healthcare expenditure appear quickly after changes in smoking behavior:** A 10% relative drop in smoking in every state is predicted to be followed by an expected $63 billion reduction (in 2012 US dollars) in healthcare expenditure the next year. State and national policies that reduce smoking should be part of short-term healthcare cost containment. <http://journals.plos.org/plosmedicine/article?id=10.1371/journal.pmed.1002020>

Pfizer sponsored a claims-based analysis demonstrating that use of Varenicline vs Nicotine Patch which showed that the additional savings exceeds the additional cost of the medication. [Healthcare Costs of Smokers Using Varenicline Versus Nicotine-Replacement Therapy Patch in the United States: Evidence from Real-World Practice | SpringerLink](https://link.springer.com/article/10.1007/s12325-018-0858-y)

ROI in targeted populations

**Hospital Based Smoking Cessation:** Mullen et al reported on the impact of inpatient smoking cessation services over usual care in 14 Canadian hospitals. Follow up at 30 days, one year and two years showed absolute reduction in risk for all-cause readmissions at 6.1%, 11.7%, and 11.6% at a p<0.001). Reduction in mortality was not evident at 30 days, but significant reductions were observed by year 1 6.0% and year 2, 7.3%; p<0.001).  [Effectiveness of a hospital-initiated smoking cessation programme: 2-year health and healthcare outcomes | Tobacco Control (bmj.com)](https://tobaccocontrol.bmj.com/content/26/3/293.short)

[Short-term Health and Economic Benefits of Smoking Cessation: Low Birth Weight | American Academy of Pediatrics (aappublications.org)](https://pediatrics.aappublications.org/content/104/6/1312.short)

[Cost-effectiveness of an Intensive Smoking Cessation Intervention for COPD Outpatients | Nicotine & Tobacco Research | Oxford Academic (oup.com)](https://academic.oup.com/ntr/article-abstract/14/6/657/1426463)

The Association of National Quitlines has developed an ROI model.

<https://view.officeapps.live.com/op/view.aspx?src=https://cdn.ymaws.com/www.naquitline.org/resource/resmgr/ppp/June2018pppempworksheet.docx&wdOrigin=BROWSELINK>

[Predictive validation and forecasts of short-term changes in healthcare expenditure associated with changes in smoking behavior in the United States - PubMed (nih.gov)](https://pubmed.ncbi.nlm.nih.gov/31945079/)

Reductions in smoking produce substantial savings in real per capita healthcare expenditure in short to medium term. A 5% relative drop in smoking prevalence (about a 0.87% reduction in absolute prevalence) combined with a 5% drop in consumption per remaining smoker (about 16 packs/year) would be followed by a $31.5 billion reduction in healthcare expenditure (in 2014 dollars).

<https://www.ajpmonline.org/article/S0749-3797(14)00616-3/pdf>

VA study

[Cost-effectiveness of real-world administration of tobacco pharmacotherapy in the United States Veterans Health Administration - PubMed (nih.gov)](https://pubmed.ncbi.nlm.nih.gov/30924195/)

[Program, policy, and price interventions for tobacco control: quantifying the return on investment of a state tobacco control program - PubMed (nih.gov)](https://pubmed.ncbi.nlm.nih.gov/22390458/)

[Cost-effectiveness of Implementing Smoking Cessation Interventions for Patients With Cancer | Public Health | JAMA Network Open | JAMA Network](https://jamanetwork.com/journals/jamanetworkopen/article-abstract/2793173)

[Health benefits and economic advantages associated with increased utilization of a smoking cessation program (becarispublishing.com)](https://becarispublishing.com/doi/full/10.2217/cer-2020-0005)

[Cost-Effectiveness of a Health System-Based Smoking Cessation Program | Nicotine & Tobacco Research | Oxford Academic (oup.com)](https://academic.oup.com/ntr/article-abstract/19/12/1508/2282829)