Assessing the Impact of Smoking Cessation Therapies on a Managed Care Organization's Budget

Graham CN[1], Earnshaw SR[1], Smith DG[2], Hogue S[3], Gitchell J[4], Marsh H[3], Becker W[3], Saunders M[3]

[1]RTI Health Solutions, Research Triangle Park, North Carolina, United States; [2]University of Michigan, Ann Arbor, Michigan, United States; [3]GlaxoSmithKline Consumer Healthcare, Moon Township, Pennsylvania, United States; [4]PinneyAssociates, Inc., Bethesda, Maryland, United States

INTRODUCTION

- Smoking is one of the most costly addictions presenting itself in the United States (US) today (US Public Health Service, 2000).
- It has been shown that stopping smoking can translate to long-term cost savings for former smokers and managed care organizations (MCOs) (Bartecchi et al., 1994; US Department of Health and Human Services, 2000; Ockene et al., 1992; Rosal et al., 1998; Halpern et al., 2001).
- A variety of smoking cessation methods such as psychological assistance programs and over-the-counter (OTC) and prescription medications are available to assist smokers in quitting.
- Quitting smoking is difficult as only between 3% and 5% are successful over the long-term (e.g., 6-12 months) (Hughes et al., 2004; Cohen et al., 1989).
- Because of the difficulty in quitting, introducing new pharmacological therapies is valuable. History has shown that when a new smoking cessation therapy is introduced to the market, there is a dramatic uptake of the new therapy (Burton et al., 2000).
- Thus, as new smoking cessation therapies come onto the market, MCOs need to be prepared and have accurate financial planning in order to appropriately estimate the impact on their prescription drug budget.

OBJECTIVE

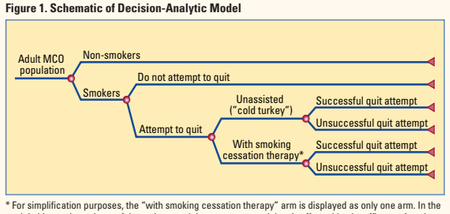
In this study, we estimate the potential budget impact to an MCO of adding a new smoking cessation therapy to an existing mix of covered and noncovered therapies. This analysis can inform decision makers who are faced with the prospect of covering an increasing number of smoking cessation therapies and are considering adding new therapies to their formulary.

METHODS

To evaluate the potential economic impact of the use of new and existing smoking cessation therapies on an MCOs budget, we model 1-year budgetary outcomes in a decision-analytic framework (Figure 1). The model scope is presented in Table 1.

- Two scenarios are modeled: (1) the current smoking cessation market; and (2) a future market after the introduction of a new smoking cessation therapy (post-introduction).
- Published literature and national survey data were used to populate the decision tree model.
- Input parameters for the model population and efficacy of comparators are displayed in Table 2.

Figure 1. Schematic of Decision-Analytic Model



* For simplification purposes, the "with smoking cessation therapy" arm is displayed as only one arm. In the model, this arm is made up of the various model comparators and thus is affected by the efficacy of each comparator, cost of each comparator, and the market share within comparators.

Table 1. Model Scope

Population	1,000,000 adult lives
Comparators	NicoDerm CQ® (branded nicotine transdermal patch 1)
	Nicotrol Transdermal Patch® (branded nicotine transdermal patch 2)
	Generic transdermal patch
	Nicorette® (branded nicotine gum)
	Generic nicotine gum
	Nicotrol Inhaler® (nicotine inhaler)
	Nicotrol Nasal Spray® (nicotine nasal spray)
	Commit Lozenge® (nicotine lozenge)
	Zyban® (branded bupropion HCL)
	Generic bupropion HCL
	New prescription therapy
	No therapy
Perspective	MCO payer
Time Horizon	1 year
Discounting	None
Outcomes	# of patients attempting to quit in the past year
	# of patients who successfully quit in the past year
	Drug costs (overall total and PMPM)
	Physician visit costs (overall total and PMPM)
	Total costs (overall total and PMPM)

PMPM = per member per month.

Table 2. Population and Efficacy Input Parameters and Sources

Population Input Parameter	Value	Source
% of Adult smokers in plan	21.6%	CDC, 2005
% Attempting to quit in the past year	41.1%	CDC, 2005
# of Quit attempts per year	2%	Assumption
Efficacy Input Parameter		
Unassisted quit rate	4%	Hughes et al., 2004; Cohen et al., 1989; Assumption
Incremental Effects over Unassisted Quit Rate		
Nicotine lozenge	9%	Shiffman et al., 2002; Assumption
Nicotine transdermal patch	6%	West et al., 2000
Nicotine gum	8%	West et al., 2000
Nicotine inhaler	8%	West et al., 2000
Nicotine nasal spray	8%	West et al., 2000
New prescription product	13%	Gonzales et al., 2006; Assumption
Bupropion HCL	9%	West et al., 2000

CDC = Centers for Disease Control and Prevention.

- The model assumes all therapies are dosed and used according to product labeling. Prescription therapy patterns were taken from their respective product inserts. Treatment patterns for OTC therapy were extracted from the manufacturer's instruction on use.
- OTC therapies are assumed to be not covered by the MCO. Prescription drugs are assumed to be placed on Tier 2 copayment levels with average US copayment costs (Kaiser/HRET Employer Health Benefits 2005 Annual Survey, 2005).
- One incremental physician visit is assumed to be needed for prescription therapy dosing or patient/adverse event monitoring. The cost of the visit is set at the cost of an outpatient visit for an established patient (Essential RBRVS, 2005).
- Drug costs for each model comparator were referenced to wholesale acquisition costs (WAC) from the Red Book (2006).
- Assumed market share for the current market and post-introduction market are displayed in Table 3.

Table 3. Product Mix Inputs and Sources

Comparator	Product Mix	
	Current Market	Post-introduction Market
Unassisted ("cold turkey")	72.00%	70.60%
Branded nicotine lozenge	3.80%	3.04%
Branded nicotine transdermal patch 1	2.50%	2.00%
Branded nicotine gum	5.40%	4.32%
Branded nicotine inhaler	0.70%	0.56%
Branded nicotine nasal spray	0.10%	0.08%
Branded nicotine transdermal patch 2	0.10%	0.08%
New prescription product	0.00%	7.00%
Branded bupropion HCL	0.10%	0.08%
Generic bupropion HCL	7.70%	6.16%
Generic nicotine gum	5.00%	4.00%
Generic nicotine transdermal patch	2.60%	2.08%

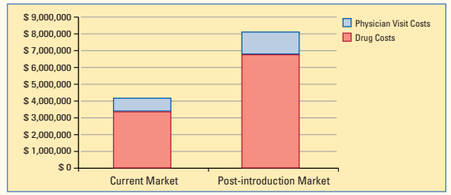
WAC = wholesale acquisition cost.
Source: Red Book, 2006; Data on File, 2005; Assumption.

RESULTS

The population and per member per month (PMPM) costs for the current market with a new prescription drug not introduced (Current Market) compared to the population and PMPM cost for the market after a new prescription drug has entered the market (Post-introduction Market) are presented in Figures 2 and 3.

- An estimated 5,554 patients quit smoking in the previous year in the current market; and
- An estimated 6,135 patients quit smoking in the previous year in the post-introduction market.

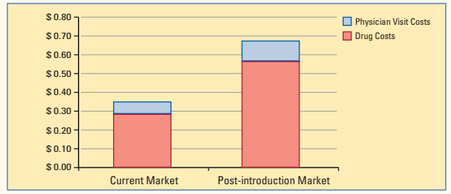
Figure 2. Population Costs Assuming 1 Million Adult Patients in Managed Care Organization



Assuming a 7% uptake of the new prescription product:

- Physician visit costs increase 66% over the current market.
- Drug costs increase 98% over the current market.
- Total costs increase 92% over the current market.

Figure 3. Annual Per Member Per Month (PMPM) Costs



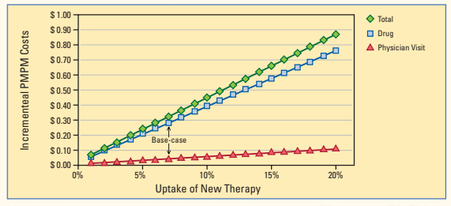
Assuming a 7% uptake of the new prescription product:

- Annual PMPM physician visits costs increase $0.04 over the current market.
- Annual PMPM drug costs increase $0.28 over the current market.
- Annual total PMPM costs increase $0.32 over the current market.

SENSITIVITY ANALYSIS

As the uptake of the new smoking cessation product is unknown, we varied the uptake in a sensitivity analysis. Results are shown in Figure 4.

Figure 4. Sensitivity Analysis of Uptake on New Smoking Cessation Product



Uptake of the new product less than the assumed 7% lowers PMPM costs in the post-introduction market, however PMPM costs never reach that of the current market.

With each 1% gain in market share of the new therapy:

- Annual PMPM physician visit costs increase $0.005 over the current market.
- Annual PMPM drug costs increase $0.037 over the current market.
- Annual total PMPM costs increase $0.042 over the current market.

LIMITATIONS

- The model considers only physician visit and drug costs. The model does not consider the downstream cost benefits of quitting smoking. These costs could contribute to formulary decision making.
- Historical sales data are used to predict future outcomes that may be of interest to decision makers in a decision-analytic framework. The new product uptake will vary by region, managed care plan, and market.

CONCLUSIONS

- Historically, new smoking cessation therapies have had large uptakes when released to the market.
- The introduction of new smoking cessation therapies to the market will have dramatic effects on MCOs' budgets.
- MCOs must use care in decision making during this time in order to make accurate decisions on budgetary issues.

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CONTACT INFORMATION

Christopher N. Graham, MSc
Research Health Economist, Health Economics
RTI Health Solutions, RTI International
3040 Cornwallis Road, PO Box 12194
Research Triangle Park, NC 27709-2194
Phone: 919.541.6322
Fax: 919.541.7222
E-mail: cgraham@rti.org

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