

Respiragene™ Research Update - May 2010

Cost savings to health care payers as a result of adding the Respiragene test to smoking cessation initiatives.

A cost/benefit analysis was conducted by The Quorum Group – Compensation and Human Resources Management Consulting Services - to assess the potential value to payers of incorporating the Respiragene test as part of a comprehensive smoking cessation program.

This cost/benefit assessment shows that for integrated health care systems and employers who must shoulder both the direct medical and indirect costs of smoking, the Respiragene test can generate substantial cost savings over time, with payback of the initial investment achieved in less than one year. Savings are generated because Respiragene motivates smokers to abstain, thereby reducing the costs associated with smoking borne by the employer/benefits system.

Incorporating the Respiragene test in a smoking cessation program provides a return on investment that exceeds most health care interventions such as cholesterol testing, prostate cancer testing or mammography⁷. On other metrics such as “cost per quit” adding Respiragene to a smoking cessation program compares favorably with other therapies such as nicotine replacement and pharmaceutical interventions (e.g. Bupropion and Varencline).

Methodology

1. Approach

A decision tree model was created to evaluate the cumulative costs per smoker to a payer incurred in offering, or not offering, the Respiragene test; their subsequent enrolment rate in company-sponsored smoking cessation plans; and the eventual result of the smokers in either stopping smoking or not. Different costs were attributed to the different pathways through the model, generating a comprehensive picture of the financial implications of adding Respiragene to an existing smoking cessation program.

2. Key assumptions of the model

Key assumptions of the model are set out below. They are based on the published scientific literature; the results of standard smoking cessation programs; and initial data from an ongoing clinical trial conducted in New Zealand which assessed the impact of the Respiragene test on the attitudes and behavior of smokers, in particular the changes in smoking cessation rates after taking the test.

Costs:

- Annual smoking costs: \$2,690 in direct medical costs, \$2,270 in non medical, indirect costs e.g. absenteeism, productivity loss etc
- Cost of Respiragene test: \$350 per person
- Cost of smoking cessation program (without Respiragene): \$350 per person

Respiragene test-taking rate and quit rates:

- Smokers eligible for the Respiragene Test: Aged over 40 and smoking 15+ cigarettes per day (typically between 25% and 30% of all covered smokers or 6% of total covered members)

- % of eligible smokers taking test: 40% under a conservative testing scenario, 75% under an aggressive testing scenario (Refer Key Findings #1)
- % of test taking eligible smokers enrolling in a smoking cessation program subsequent to their taking a Respiragene test: 27%,
- Quit rate of Respiragene test-takers: 21% - comprising 6% from the group of test takers who gained assistance from a cessation program and 15% from the test takers who quit without a program.

Without Respiragene, quit rate assumptions:

- Average annual quit rates: 6% in total - comprising 1% who gained assistance from a program and 5% who quit without a program.

Key Findings

1. Two key drivers of cost savings

The cost/benefit analysis showed there are two key variables impacting the level of cost saving:

- **Cessation rates achieved amongst Respiragene test-takers (vs. non test-takers).** The model assumes a quit rate of 21% of Respiragene test-takers, which is one-third less than the cessation rate observed in the New Zealand pilot study which showed a 32% cessation rate at 6 months after taking the Respiragene test¹⁰. Consistent with the assumptions underpinning other key variables in this model, we have used a conservative estimate of quit rates to ensure that this evaluation does not overstate the benefits. In reality, greater savings will be made if higher cessation rates are achieved.
- **Proportion of covered smokers who take the Respiragene test.** This will be largely determined by the approach to testing adopted by the payer organization. With an effective communication strategy about Respiragene and encouragement to take the test, high up-take can be expected. The NZ pilot study showed that smokers express strong interest in taking the Respiragene test: of the randomly selected smokers contacted for the study, 90% of those offered Respiragene took up the opportunity to undertake testing. However, for this model we have demonstrated the impact on the cost savings on two lower levels of test uptake:
 - Conservative implementation : 40% of eligible smokers take test
 - Aggressive implementation : 75% of eligible smokers take test.

2. Significant long term cost savings can accrue to health care providers by incorporating Respiragene in their smoking cessation initiatives

Implementing a smoking cessation program that incorporates Respiragene as a key component can save employers or integrated health service providers over \$4,000 per Respiragene test-taker in cumulative cost savings over a five year period and savings of over \$9,000 over a ten year period, net of the cost of providing the Respiragene test itself. These cost savings are calculated per Respiragene test taker in the target population, not just those who successfully stop smoking. To illustrate these data, in a company with a 10,000 member health plan, and the conservative test uptake rate of 40%, these savings rates translate to approximately \$950,000 over a five year period and \$2.1 million over a 10 year period. With the higher Respiragene test uptake of 75%, savings are almost doubled (Refer Table 2 below).

Table 2 Cost savings accruing to a hypothetical health benefits service providers resulting from offering Respiragene		
	40% test uptake	75% test uptake
Number of covered members	10,000	10,000
Number of smokers in plan	2,200	2,200
Number of eligible smokers	583	583
Number of test-takers	233	437
Number of quits	49	91
Cumulative cost saves/test taker:		
5 years	\$4,083	\$4,083
10 years	\$9,035	\$9,035
Cumulative total cost saves:		
5 years	\$0.95 mm	\$1.78 mm
10 years	\$2.11 mm	\$3.95 mm

3. Providing the Respiragene test is a cost-effective investment for health care plans

Table 3 below shows the performance of the Respiragene test on various metrics that are typically used to measure the cost-effectiveness of healthcare interventions. On all financial measures, Respiragene provides an excellent return on investment. Further, the cost per quit of adding Respiragene to a smoking cessation program of around \$2,100 is at the lower end of other smoking cessation strategies, such as counseling at \$1,800 per quit, nicotine replacement therapies plus counseling at \$2,250 per quit or pharmaceutical interventions (e.g. Bupropion) plus counseling at \$2,500 per quit⁴.

Table 3 Key measures of cost- effectiveness of Respiragene test in hypothetical organization		
	40% test uptake	75% test uptake
Number of members	10,000	10,000
Total investment to offer Respiragene	\$103,740	\$194,510
IRR	56%	56%
Added cost per member per month	\$0.86	\$1.62
Cost per quit	\$2,140	\$2,140

Conclusion

Adding Respiragene to existing smoking cessation initiatives:

- Boosts effectiveness of these programs (6% quit rate with standard cessation programs, up to 21% with Respiragene) at modest cost, providing more bang for the smoking cessation buck
- Generates significant long term cumulative savings for health care payers by reducing the number of smokers covered by the plan – even with a conservative uptake rate of 40%
- Provides a relatively high return on initial investment (IRR = 56%)
- Is a cost-effective intervention, when compared to other smoking cessation services.

The cost of offering Respiragene is modest in the context of employers' health benefits programs; its proven effectiveness in significantly boosting cessation rates should easily justify its inclusion in smoking cessation programs. Further value that has not been quantified in this cost/benefit analysis can be realized in the context of future patient monitoring and prioritization in early lung cancer detection or chemoprevention strategies.

References

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