DFWBGH Demonstration Project: Chronic Obstructive Pulmonary Disease (COPD) Awareness Program at Southwest Airlines

Project Report

January 2008

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Economic Burden of COPD on Employers

According to the Centers for Disease Control, chronic conditions largely drive the cost of health care, accounting for 75% of all health care expenditures in the U.S. in 2001. Particularly costly for employers is **Chronic Obstructive Pulmonary Disease (COPD**), a chronic and progressive lung disease that affects 70% of the working age population and is responsible for more deaths in the U.S. than all other lung diseases combined. In fact, the National Heart, Lung and Blood Institute says that COPD is now the fourth leading cause of death in the U.S. and is projected to be the third leading cause by 2020.

COPD is a group of diseases, including emphysema and chronic bronchitis, characterized by airflow obstruction, shortness of breath, and chronic productive cough. Unfortunately, this preventable and treatable chronic condition is often a silent and unrecognized, under-diagnosed, misdiagnosed and under-treated disease. According to the National Center for Health Statistics there are 24 million people with evidence of impaired lung function but only 12 million are diagnosed. In its milder forms it is difficult to detect and diagnose clinically without the use of spirometry, a simple test that measures the total amount and speed at which a person can breathe out air.

COPD is frequently confused with asthma and often coexists with asthma, making it difficult to discriminate between the two conditions. COPD also is commonly associated with many other serious conditions, including cardiovascular diseases, hypertension, sleep apnea, and other respiratory diseases.

Smoking is responsible for 80% of COPD cases, making COPD one of the most preventable and treatable chronic conditions. In fact, smoking cessation is the only intervention that has been shown to delay the onset of airflow limitation or reduce its progression.

From a business perspective, COPD can be extremely expensive both in terms lost work and increased benefits payments, including higher healthcare utilization (COPD patients have two to three times higher hospitalizations than persons without COPD), absenteeism, on-the-job productivity losses, and increased short- and long-term disability claims. Based on sick leave, disability payments and health insurance costs, COPD was ranked as one of the ten most costly diseases to U.S. employers in 1999; in 2004 COPD accounted for $37.2 billion in direct and indirect medical costs.

Worksite COPD Awareness Program

The Dallas-Fort Worth Business Group on Health and Southwest Airlines realize there is a strong need to support educational efforts in increasing the awareness and the appropriate diagnosis and management of COPD. In July 2007, representatives from both organizations met to outline a project plan for a worksite COPD Awareness Program, supported by Boehringer Ingleheim Pharmaceuticals.

The program consisted of the following components:

1. Worksite Lung Health Screening performed by US Wellness (September 26, 2007)
2. Distribution of COPD educational materials to screening participants (unbranded materials provided by Boehringer Ingleheim Pharmaceuticals)
3. Analysis of Southwest Airlines COPD-related medical claims data performed by SWA's claims administrator, United HealthCare (September 2007)
4. Project report (January 2008)
5. Employee educational program conducted by a trained medical professional at SWA Headquarters ("Lunch & Learn" to be scheduled in 2008)
6. SWA Case Study Presentation for DFW area employee benefits managers at DFWBGH Corporate Benefits Forum (to be scheduled in Spring 2008)

Program Goals

The primary goal of this program is to enhance the awareness and management of COPD in working population. All agreed that the efforts of employers, health plans, practitioners and employees in recognizing and managing disease through targeted interventions is crucial to the success of any health awareness program.

DFWBGH Goals for the COPD Awareness Program:

- Assist employers in delivering value-based health benefits to their employees
- Use this initiative to educate employers on the importance of correct diagnosis and treatment of employees with COPD
- Provide successful worksite COPD program template along with educational services to interested employers

Southwest Airlines Goals for the COPD Awareness Program:

- Build a business case for COPD risk reduction and disease management programs
- Use the event to kick-start other worksite wellness and health promotion efforts
- Identify employees that are interested in smoking cessation programs

Worksite Lung Health Screening

In mid-September 2007, SWA announced to its Love Field-based employees that a complimentary Lung Health Screening, sponsored by SWA and DFWBGH, would be conducted at SWA's Headquarters on **September 26, 2007**. Posters about the event were created by SWA's graphics department and posted around the Headquarters building two weeks before the screening.

On the day of the event, a screening station was set up in a designated room. Screenings were performed by trained health professionals employed by U.S. Wellness, Inc., a third party service provider based in Dallas, Texas. Arrangements and funding for the screening were provided by Boehringer Ingleheim Pharmaceuticals.

Participants were asked to sign a confidentiality statement and liability waiver provided by US Wellness. Each participant was provided an explanation of what COPD is, how the spirometry test works, and what it measures (air-flow volume), how results are calculated, and what a normal and an abnormal result is, based on the person's age, height, weight and gender. To further reinforce their awareness of COPD, participants also received unbranded educational materials, provided by Boehringer Ingleheim Pharmaceuticals, about this chronic condition and the spirometry screening test.

Screening Results:

360 SWA employees participated in the screening, including 201 women and 154 men. The average age of participants was 47 years, with 29 percent between the ages of 40 and 49 years. Thirty-four participants said that they currently are smokers and 64 reported that they had smoked in the past.

Abnormal spirometry results were found in 75 participants, or approximately 21% of the screened population. These abnormal results were nearly evenly split between male and female employees.

Results of the Lung Health Screening, as reported by U.S. Wellness, are shown below in Figures 1 and 2.

Figure 1

Lung Health Screening Report

Prepared by US Wellness, Inc.

Event Location :	**TX**
Event Date :	**9/26/2007**
Qualified No. Screened :	**360**
Below Normal Results :	**75**
Patients with Ratio less than 70 % :	**23**
Percentage Of Participants with abnormal results :	**20.83 %**
Percentage of Patients With Ratio Less Than 70% :	**6.39%**

* 23 persons, or 6.39% had FEV1/FVC, a measure comparing how much air a person can expel in one second to the total volume of air that can be expelled, results that were less than 70% predicted based on the person's age, height, weight, and gender. Abnormal spirometry is defined as pre bronchodilator results FEV1/FVC < 70% or FEV1 < 80% predicted
* 64 reported being past smokers and 34 reported being current smokers
* There were 201 females and 154 males screened; abnormal results were 36 and 37 respectively
* 29% were between ages 40-49
* 38 reported that they were experiencing symptoms associated with lung impairment
* 70 have sought medical treatment within the last 18 months
* 28 have reported receiving a medication

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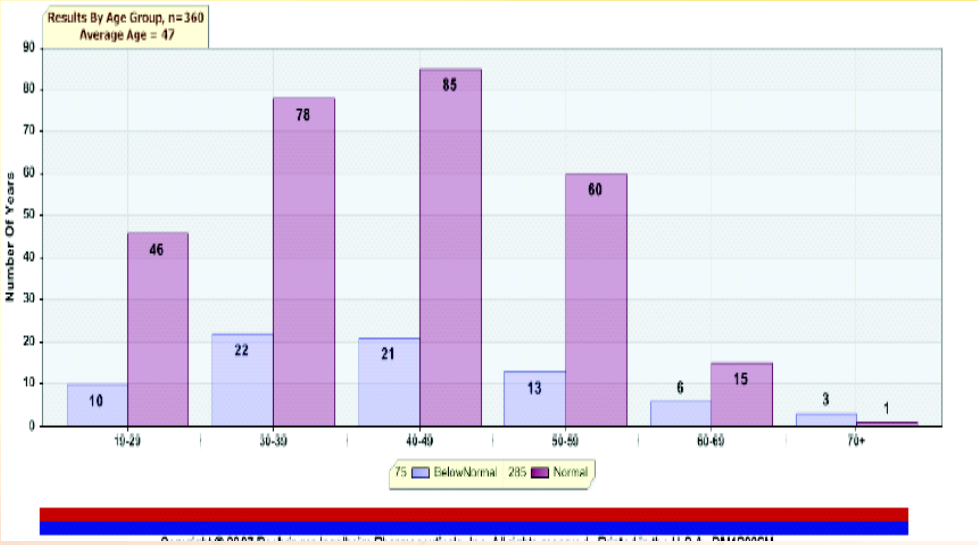
Figure 2

Lung Health Screening Report



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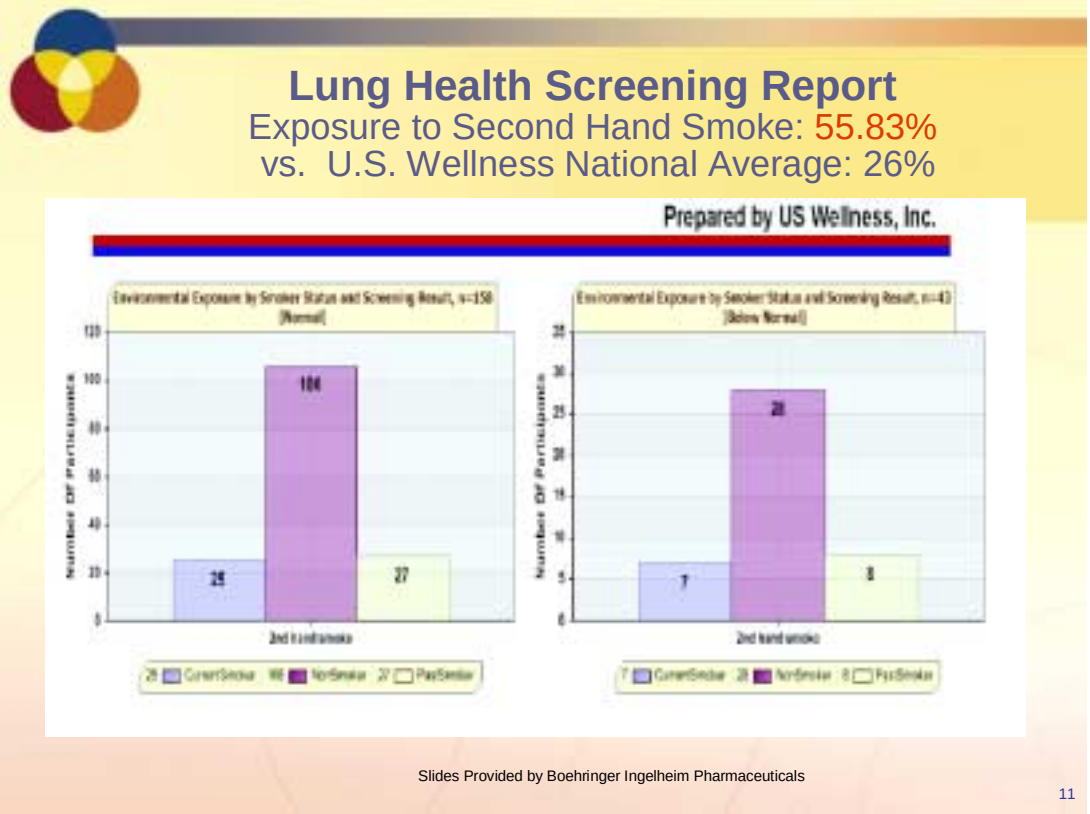
Smoking and COPD

According to a 2004 report of the U.S. Surgeon General on the health consequences of smoking, a history of smoking or exposure to second-hand smoke is present in 80% to 90% of COPD cases.

Southwest Airlines does not restrict smoking at the workplace, so it is likely that both smokers and non-smokers alike are exposed to second-hand smoke during working hours. The lung screening revealed that SWA employees have a higher than average exposure to second-hand smoke. Nearly 56 percent of screening participants said that they were exposed to second-hand smoke, which is over twice the national average of 26% found in US Wellness, Inc.'s spirometry screenings. Twenty-one percent of those who are exposed to second-hand smoke had abnormal sprirometry results, as shown in Figure 3 below.

Figure 3:



A photo of the lung screening event at Southwest Airlines and comments from several participants are included in **Appendix A** at the end of this report.

Medical Claims Analysis

SWA's third party claims administer, United HealthCare, provided an analysis of SWA's COPD-related and asthma-related medical claims for Dallas-based employees and also for all U.S. employees for 2006.

As shown in the tables below, for Dallas-based employees, the number of COPD-related visits during this period was about one-fourth the number of asthma visits, yet health care costs for COPD was nearly the same as for asthma, totaling $43,061 for COPD and $44,412 for asthma. This suggests that although there are fewer Dallas-based employees with COPD compared to those with asthma, health care costs per employee are higher for COPD.

Table 1: Southwest Airlines Dallas Employees, 2006-2007

Total COPD Claimants: 56
Patient Visits: 50
Cost: $43,061.19

Total Asthma Claimants: 175
Patient Visits: 202
Cost: $44,411.74

ICD9_CODE	ICD9_DESC	NET_PAID	CLAIMANT	VISITS
496	CHR AIRWAY OBSTRUCT NEC	38632.43	40	39
4910	SIMPLE CHR BRONCHITIS	822.08	6	5
4911	MUCOPURUL CHR BRONCHITIS	261.16	1	1
4920	EMPHYSEMATOUS BLEB	151.68	1	2
4928	EMPHYSEMA NEC	3184.76	7	3
4930	EXTRINSIC ASTHMA	10	1	0
5181	INTERSTITIAL EMPHYSEMA	9.08	1	0
49300	EXTRIN ASTHMA NO ASTHMATCUS/XACRBAT	35969.82	132	157
49301	EXT ASTHMA W STATUS ASTH	3657.82	13	8
49302	EXT ASTHMA W AC EXACRBTN	4774.1	29	37

On a national basis, COPD-related claimants and medical visits were nearly three times fewer than for asthma in 2006; however, COPD costs were about half of asthma costs for the same time period. As shown in the figure below, these two lung diseases, COPD and asthma, cost the company a total of $325,550 in direct medical expenses in 2006.

Table 2: Southwest Airlines National Data, 2006-2007

Total COPD: 269
Patient Visits: 307
Cost: $112,228.74

Total Asthma: 778
Patient Visits: 952
Cost $213,320.82

ICD9_CODE	ICD9_DESC	NET_PAID	CLAIMANT	VISIT
496	CHR AIRWAY OBSTRUCT NEC	$94,571.14	192	249
4910	SIMPLE CHR BRONCHITIS	$1,951.14	26	22
4911	MUCOPURUL CHR BRONCHITIS	$480.34	7	7
4920	EMPHYSEMATOUS BLEB	$2,921.02	4	2
4928	EMPHYSEMA NEC	$9,839.60	34	15
4930	EXTRINSIC ASTHMA	$180.03	2	0
5181	INTERSTITIAL EMPHYSEMA	$2,465.50	6	12
49300	EXTRIN ASTHMA NO ASTHMATCUS/XACRBAT	$157,829.43	575	691
49301	EXT ASTHMA W STATUS ASTH	$10,765.23	50	58
49302	EXT ASTHMA W AC EXACRBTN	$44,546.13	151	203
Total		$325,549.56	1,047	1,259

Next Steps

DFWBGH and Southwest Airlines are evaluating future opportunities to provide COPD-focused "Lunch and Learn" educational sessions for Southwest Airlines employees. DFWBGH is also considering plans to implement additional educational initiatives around COPD, including making available a comprehensive suite of educational materials for both coalition members and providers as a way to increase awareness of this under and mis-diagnosed chronic condition. Anyone interested in receiving educational materials may request them directly by emailing info@dfwbgh.org.

Improving COPD Care and Costs

As with many chronic conditions, early diagnosis and treatment is the best way to manage COPD. Prevention and care improvement strategies should focus on risk avoidance, health promotion, screening and appropriate diagnosis.

Providing educational and lung screening programs for employees, as Southwest Airlines has done, contributes greatly to increasing awareness of the condition at the early stages. Such worksite programs also can help employees who are at risk for or may already have this progressive disease to better understand their treatment options and improve their skills for coping with the illness (including smoking cessation).

In addition, that the results of the lung screening and COPD-related claims analysis should provide useful information to about a costly chronic disease to guide SWA's benefits design decisions that can result in healthier employees and a healthier bottom line.

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Acknowledgements

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- **Boehringer Ingleheim Pharmaceuticals** for providing financial support and assistance with project design, planning and implementation.
- **United HealthCare** for providing a detailed analysis of Southwest Airlines' COPD-related and asthma-related claims data.

DFWBGH would like to recognize the following individuals for their substantial contributions to the success of this project:

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- **Marianne Fazen,** DFWBGH Executive Director, for her leadership and direction in project development, implementation and reporting.

Appendix A

Screening Participants' Comments

"My dad died of lung cancer and my mom was diagnosed with COPD in her mid 40's. I've been smoking for almost 25 years. I've tried to quit before but it's really been hard for me. This program has helped me realize even more that I need to quit and how much smoking affects my health"

"I'm 26 years old and have been smoking for 10 years. I am really surprised with how poor my lung function results were. I can't believe that I have the lungs of a 60 year old. I know I need to quit smoking"

"I have been a smoker for 35 years and have attempted to quit smoking several times. I have actually been in the process of cutting down for the last 6 weeks but broke down and bought a pack last night. Finding out that I have the lungs of a 72 year old was a very rude awakening and the kick in the tush I needed"

"This was a lot of fun. I am ready to do it all over again."

"This was my first time getting a lung health screening and there was a lot of really good information and great cheerleaders!"

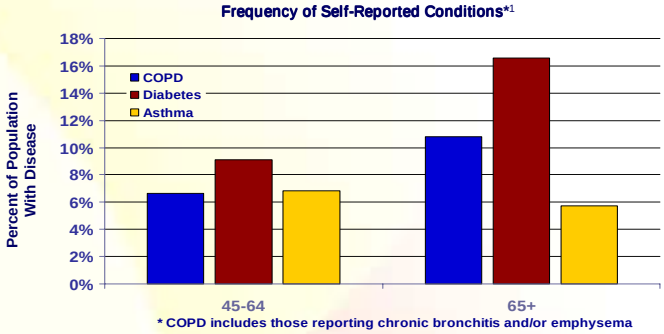
"This is a lot harder than it looks!"

"I am very happy I had my lung health screening today. I've received very good news."

Appendix B
The Economic Burden of COPD on Employers

Not Only a Disease of the Elderly… And As Prevalent As Other Chronic Diseases

- Almost 70% of COPD patients are <65 years of age[1]
- COPD prevalence is similar to asthma and diabetes in individuals between 45 and 65 years of age[1]



Only 58% of diagnosed COPD patients received one or more bronchodilator agents during a 12-month period[2]

1. Lethbridge-Çejku M et al. *Vital Health Stat.* 10(225). DHHS Publication No (PHS) 2005.
2. Schloss S et al. Poster presented at: The 99th International Conference of the American Thoracic Society; May 16-21, 2003; Poster 4901.

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COPD Imposes a Heavy Burden on Working-Age Patients

- COPD patients aged 25-64 accounted for[1]
  - 63% of emergency department visits for COPD
  - 46% of total hospital outpatient visits for COPD
  - 34% of COPD hospitalizations
- 46.1% of COPD patients are employed [2]
  - 3.6 to 9.2 lost workdays annually [2,3]
  - Suboptimum performance and productivity [2]
- Ranks 6th for both bed-days (176 million) and work-loss days (57 million)[4]

1. Mannino DM et al. *MMWR Surveillance Summaries*. 2002;51(SS-6);1-16. **2.** Tinkelman D, Corsello P. *Am J Manag Care.* 2003;9:767-771.
3. Strassels SA et al. *Chest.* 2001;119:344-352 **4.** Druss BG et al. *Health Aff* (Millwood). 2002;21:105-111.

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Smoking: The Primary Risk Factor[1]

- History of smoking or exposure to smoking is present in **80%** to **90%** of COPD cases[1]

1. United States Department of Health and Human Services. The health consequences of smoking: a report of the Surgeon General; 2004. Available at: www.surgeongeneral.gov/library/smokingconsequences/. Accessed February 01, 2007.

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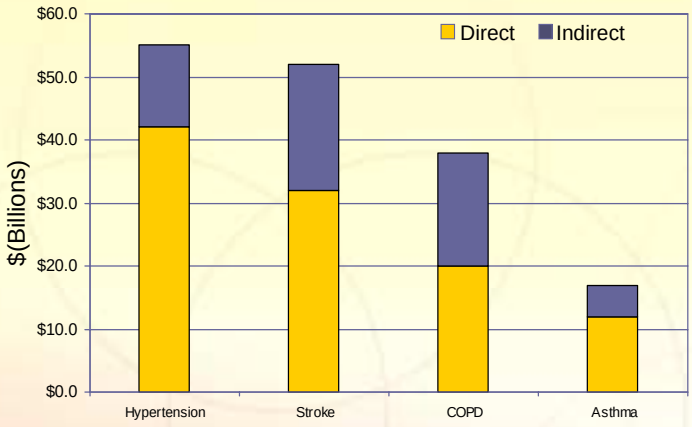
COPD Ranks Behind Hypertension and Stroke in Total Cost Burden[1]

Cost Burden of Select Diseases[1]



- COPD costs nearly 2.5 times as much as asthma and is associated with far greater mortality than asthma[1]
- Direct costs are defined as diagnosis and disease management
- Indirect costs are defined by absenteeism and reduced productivity

1. National Heart, Lung, and Blood Institute. Morbidity & Mortality: 2004 chart book on cardiovascular, lung, and blood diseases. May 2004. Bethesda, Md: U.S. Department of Health and Human Services, Public Health Service, National Institutes of Health; 2004. Available at: www.nhlbi.nih.gov/resources/docs/04_chtbk.pdf. Accessed February 01, 2007.

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