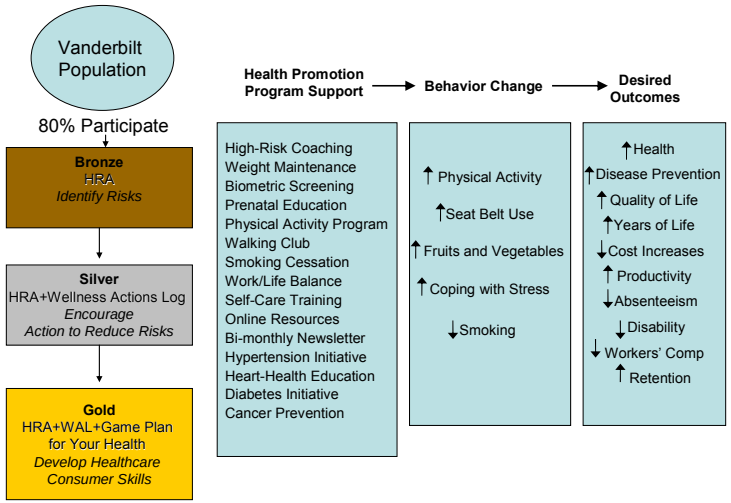
Overview of Vanderbilt's *Go for the Gold* Wellness Program

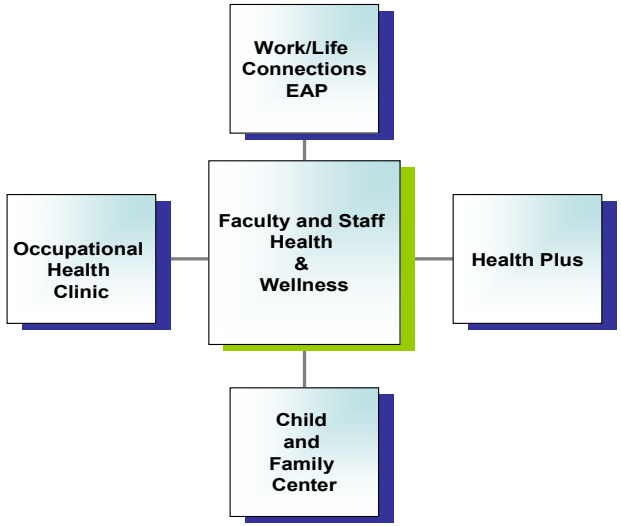


Conceptual Framework

1) Faculty and staff are encouraged to participate in health promotion programs through a multimedia approach that includes e-mail, a wellness newsletter, and targeted marketing.
2) The Bronze level helps identify risks via the health risk assessment and a detailed health report.
3) The Silver level teaches and encourages action to help people reduce risks or remain low risk in a way that allows everyone to be a winner.
4) The Gold level educates participants on how to develop new skills to become wise health care consumers.
5) A variety of outreach wellness programs support and encourage healthy behaviors throughout the year, helping to keep those at low risk, low.
6) A high-risk coaching program helps high-risk participants set and work toward a wellness goal by applying the Stages of Change Theory and using Motivational Interviewing techniques.

Integration of Program

Vanderbilt Health and Wellness, a division of Human Resources, within the Department of Administration, has successfully integrated the following four groups to create an effective synergy: Health *Plus* (the employee wellness program), the Occupational Health Clinic, Work/Life Connections-EAP, and the Child and Family Center. Managers and staff of these groups collaborate to create partnerships that will be mutually beneficial in supporting the effectiveness of programs and interventions. In addition, Health and Wellness works with other departments, such as Benefits, Safety, and Nursing, to integrate the work environment and policies at an individual, population, and cultural level. Planning and troubleshooting are key elements of weekly *Go for the Gold* internal meetings and monthly collaborative meetings with senior leaders.



Management Commitment

Leadership at Vanderbilt has not only supported the funding of *Go for the Gold* but has also funded the creation of a state-of-the-art fitness center. The *Go for the Gold* Wellness Program, created and run by the Vanderbilt employee wellness program, Health *Plus,* continues to have senior leadership as well as financial support. Leaders have encouraged participation in the *Go for the Gold* program, have promoted healthy lifestyle behaviors, and have participated in many wellness initiatives. Specific examples of their support include participation in the Leading by Example interview feature in the bi-monthly newsletter, in the Senior Leader Walk for Fitness in which many senior leaders participated by leading walks, and the ribbon cutting ceremony for the state-of-the-art fitness facility.

Worksite Policy and Organizational Changes that Support Behavior Changes and Health

Vanderbilt has made numerous policy and environmental innovations to support wellness and healthful behavior changes. The current policy prohibits smoking in all buildings, and a medical center-wide smoking ban takes effect in September 2008. In an effort to be as supportive as possible for those who smoke or who have recently quit, Vanderbilt has created a task force to identify how to provide resources to faculty and staff and to help them lead a smoke-free life. Recent research from the Framingham study on the importance of the social networks in the collective dynamics of smoking supports these policy changes.[6]

Vanderbilt University's decision to offer a state-of-the-art fitness center to faculty and staff at no charge as part of the benefits package encourages healthy behaviors without the barrier of cost.

Healthier food options, such as sushi and vegetarian plates, have been added to the cafeterias and healthy vending options are being piloted. The Farm to Hospital Initiative committee, which includes Health and Wellness and the local farmers' market, is working on a three-year rollout plan to bring locally grown fruits and vegetables to the Vanderbilt campus. At the conclusion of year three, an on-site farmers market and community supported agriculture box program will be in place. Worksite policy to support healthy food options also influences the selection and retention of food vendors.

Multiple exercise trails with markers  each tenth of a mile are being installed this summer on the beautiful University campus and will enhance the Start! physical activity program already underway with over 2,000 faculty/staff enrolled.

The Vanderbilt Police Department has a new initiative whereby seat belt compliance is monitored. Faculty and staff wearing seatbelts are given an incentive of a 10% discount at the Vanderbilt University Bookstore. Others are encouraged to wear seat belts and receive a fact sheet regarding seat belt compliance.

Communications

The Health *Plus* marketing and communication strategy has continued to become more sophisticated as the *Go for the Gold* program has evolved. Faculty and staff receive messages in a wide variety of ways according to their needs.

Methods for communicating include: web sites, campus publications, the bi-monthly newsletter mailed to homes of faculty/staff, flyers, posters, booths at events, presentations, electronic calendars and postings, as well as targeted e-mails and mailings.

The Health *Plus* team holds a monthly journal club to review and critically interpret the wellness literature. This allows the team to keep abreast of the latest developments in the field of wellness and to communicate the results of the program to academic colleagues with credibility.

Progress toward the healthy lifestyle characteristics and the 2010 goals are communicated to employees in the "Healthy Pulse at Vanderbilt" section of the bi-monthly newsletter. The newsletter was recently honored by the League of American Communication Professionals as part of the 2006 Inspire Newsletter Magazine Awards.

Data Warehouse

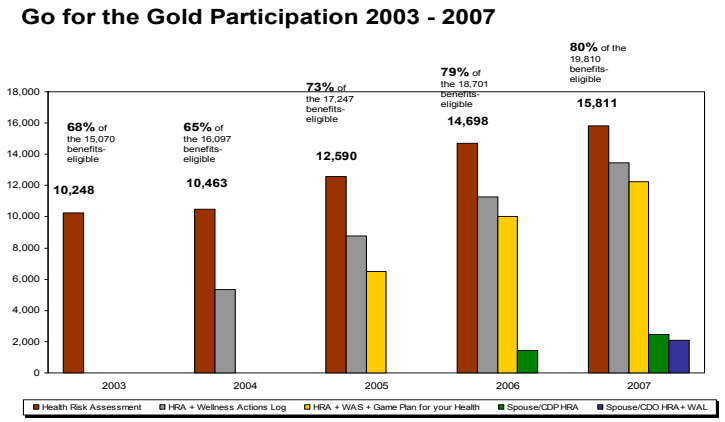
Prior to analysis, all data sets are de-identified using a 2-person coding method to protect confidentiality. Each year, the health risk assessment data set is merged with the master employee data set. The five years of paired data are merged to enable tracking of progress and program evaluation. These data sets are also merged with workers' compensation data files, absence data, and health claims data. Data on retention, turnover, compliance, and employee satisfaction are also maintained. The data warehouse is carefully protected with numerous levels of security.

Reliability of Self-Reported Health Risk Assessment Data

Prior to 2003, a registered nurse at Health *Plus* measured the height, weight, total cholesterol, and other biometrics during a visit in which participants completed their health risk assessment. Using a paper version of the health risk assessment and the nursing assessment were costly and time-consuming. Health *Plus* assessed the reliability of the self-reported heights and weights with the values from the nursing assessment and found high levels of agreement. This provided evidence that changing to an online HRA with self-reported results would allow the leveraging of resources and maintenance of accurate biometric data.

Program Participation

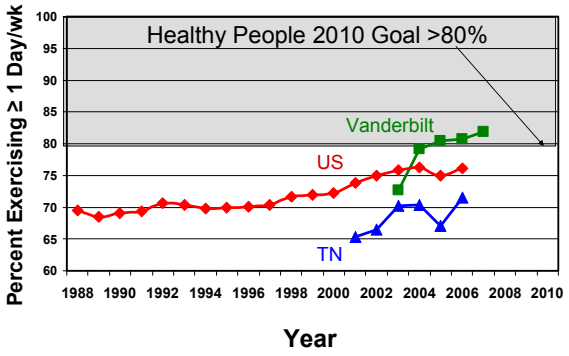
Participation in *Go for the Gold*, defined as completing the heath risk assessment, has increased in each of the 5 years and is now at 80%. *Go for the Gold* and the various program components are built into the workplace process to facilitate participation. Newly hired faculty and staff, for example, complete the health risk assessment as part of the orientation process.



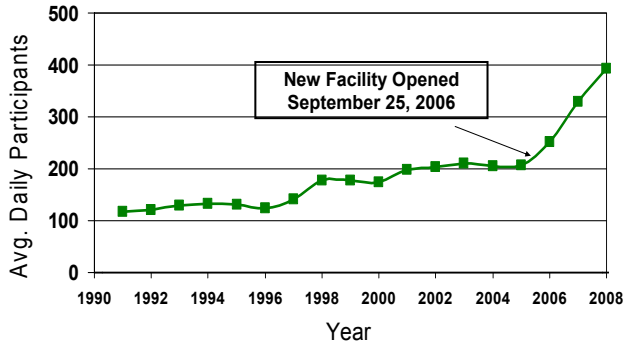
Health Impact - Health Risks and Behaviors (Years 1-5) Unpaired Analysis from all Participants

Health Risk Measure	High Risk Criteria	Year 1 2003 n=10,248	Year 2 2004 n=10,463	Year 3 2005 n=12,444	Year 4 2006 n=14,698	Year 5 2007 n=15,811
Age (years) (mean ± SD)		40.4 ± 10.9	40.6 ± 11.0	41.4 ± 11.1	40.7 ± 11.3	40.8 ± 11.5
(range)		(18-83)	(18-79)	(18-80)	(18-81)	(18-82)
Gender						
Male		3275 (32.0%)	3260 (31.2%)	3899 (31.3%)	4611 (31.4%)	4880 (30.9%)
Female		6973 (68.0%)	7203 (68.8%)	8545 (68.7%)	10087 (68.6%)	10931 (69.1%)
Body Mass Index		27.4 ± 7.2	26.9 ± 6.4	27.0 ± 6.3	27.1 ± 6.3	27.2 ± 6.4
Physical activity	Less than one time/wk	2,794 (27.3%)	2,187 (20.9%)	2,429 (19.5%)	2834 (19.3%)	2864 (18.1%)
Illness days	>5 days last year	1,290 (12.6%)	1,158 (11.1%)	1326 (10.7%)	1530 (10.4%)	1616 (10.2%)
Smoking	Current smoker	1,179 (11.5%)	1,146 (11.0%)	1,281 (10.3%)	1491 (10.1%)	1560 (9.9%)
Stress	High	1,176 (11.5%)	940 (9.0%)	1,073 (8.6%)	1222 (8.3%)	1243 (7.9%)
Safety belt usage	Does not always wear a seat belt	1,404 (13.7%)	1,125 (10.8%)	1,087 (8.7%)	1243 (8.5%)	1180 (7.5%)
Overall risk levels[3]						
Low risk	0-2 high risk criteria	7,587 (74.0%)	8,274 (79.1%)	9,926 (79.8%)	11,749 (79.9%)	12,655 (80.0%)
Medium risk	3-4 high risk criteria	2,049 (20.0%)	1,685 (16.1%)	1,939 (15.6%)	2,285 (15.5%)	2,477 (15.7%)
High risk	5 or more high risk criteria	612 (6.0%)	504 (4.8%)	579 (4.7%)	664 (4.5%)	679 (4.3%)
Overall wellness score (mean ± SD)		52.5 ±19.3	56.8 ± 19.5	56.1 ± 19.6	56.4 ± 19.6	56.6 ± 19.5

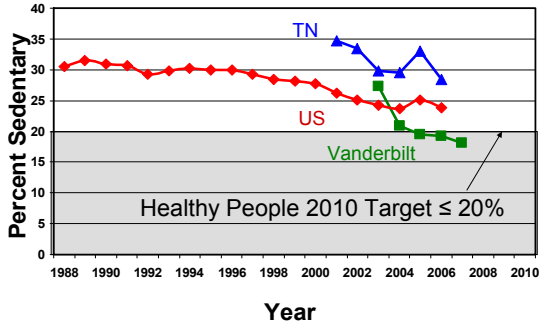
Physical Activity Trend Chart



Average Daily Fitness Facility Participation
By Year 1991-2008



Percent Sedentary Trend Chart



Health Impact - Health Risk and Behavior (Years 1-5) Paired Analysis from 5-Year Participating Cohort

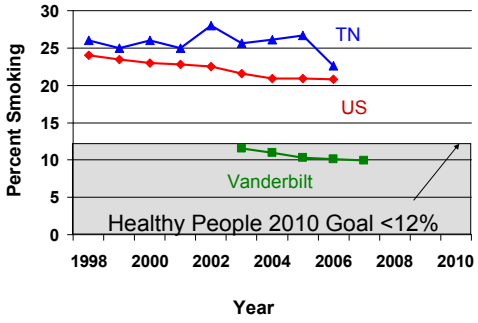
Health Risk Measure	High Risk Criteria	Year 1 2003 n=4,512	Year 2 2004 n=4,512	Year 3 2005 n=4,512	Year 4 2006 n=4,512	Year 5 2007 n=4,512	P Value* (Yr 1 to 5)
Age (years)		43.6 ± 9.7	44.6 ± 9.7	45.6 ± 9.7	46.6 ± 9.7	47.6 ± 9.7	<0.001[a]
(range)		(19.8-77.8)	(20.8-78.8)	(21.8-79.8)	(22.8-80.8)	(23.8-81.8)	
Gender							1.000[b]
Male		1333 (29.5%)	1333 (29.5%)	1333 (29.5%)	1333 (29.5%)	1333 (29.5%)	
Female		3179 (70.5%)	3179 (70.5%)	3179 (70.5%)	3179 (70.5%)	3179 (70.5%)	
Body Mass Index		27.6 ± 7.2	27.1 ± 6.5	27.2 ± 6.4	27.4 ± 6.4	27.5 ± 6.4	<0.001[a]
Physical activity	Less than one time/wk	1207 (26.8%)	790 (17.5%)	704 (15.6%)	682 (15.1%)	658 (14.6%)	<0.001[b]
Smoking	Current smoker	411 (9.1%)	389 (8.6%)	345 (7.6%)	316 (7.0%)	286 (6.3%)	<0.001[b]
Stress	High	478 (10.6%)	371 (8.2%)	328 (7.3%)	318 (7.0%)	312 (6.9%)	<0.001[b]
Safety belt usage	Does not always wear a seat belt	513 (11.4%)	383 (8.5%)	296 (6.6%)	260 (5.8%)	223 (4.9%)	<0.001[b]
Illness days	>5 days last year	553 (12.3%)	494 (10.9%)	518 (11.5%)	523 (11.6%)	509 (11.3%)	0.104[b]
Perception of health	Fair or poor	171 (3.8%)	143 (3.2%)	133 (2.9%)	140 (3.1%)	139 (3.1%)	0.026[b]
Life satisfaction	Happy "none of the time" or "a little of the time"	164 (3.6%)	142 (3.1%)	129 (2.9%)	125 (2.8%)	122 (2.7%)	0.005[b]
Overall risk levels[3]							<0.001[b]
Low risk	0-2 high risk criteria	3400 (75.4%)	3633 (80.5%)	3641 (80.7%)	3626 (80.4%)	3610 (80.0%)	
Medium risk	3-4 high risk criteria	873 (19.3%)	695 (15.4%)	679 (15.0%)	691 (15.3%)	693 (15.4%)	
High risk	5 or more high risks criteria	239 (5.3%)	184 (4.1%)	192 (4.3%)	195 (4.3%)	209 (4.6%)	
Overall wellness score		53.5 ± 19.1	58.4 ± 19.5	57.8 ± 19.7	58.4 ± 19.7	58.6 ± 19.7	<0.001[a]

* P values refer to 2003-2007 comparisons; *a* denotes Wilcoxon signed-rank test; *b* denotes McNemar's test.

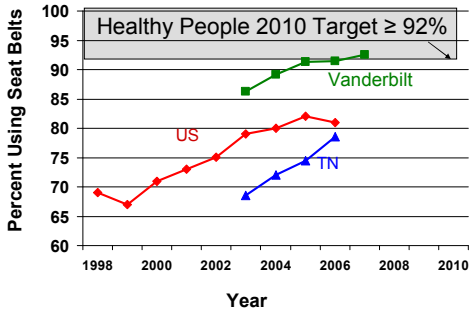
Progress Toward Healthy People 2010 Goals

Healthy People 2010 Goal[5]	HP 2010 Target	US Average	Vanderbilt 2007 Results	Vanderbilt Met Target?
Increase the proportion of employees who participate in employer-sponsored health promotion activities (Goal 7-6)	≥50%	59%	80%	Yes
Increase the proportion of worksites that offer a comprehensive employee health promotion program to their employees (Goal 7-5f)	≥75%	50%	Yes	Yes
Increase the proportion of worksites that offer nutrition or weight management classes or counseling (Goal 19-16)	≥84%	54%	Yes	Yes
Increase the proportion of worksites employing 50 or more persons that provide programs to reduce employee stress (Goal 20-9)	≥50%	37%	Yes	Yes
Reduce smoking in adults (Goal 27-1a)	<12%	20.8%	9.9%	Yes
Exercise ≥ 3 days per week (Goal 22-3)	≥30%	22%	53.7%	Yes
Reduce the proportion of adults who engage in no leisure-time physical activity (Goal 22-1)	≤20%	23.9%	18.1%	Yes
Increase use of safety belts (Goal 15-19)	≥92%	82%	92.5%	Yes
Reduce the proportion of adults who are obese (Goal 19-2)	≤15%	33%	26.1%	No

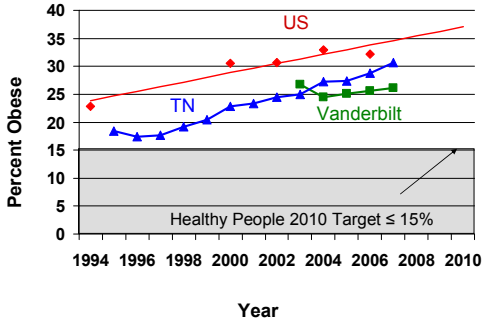
Smoking Trend Chart



Seat Belt Trend Chart



Obesity Trend Chart



Healthy Lifestyle Characteristics

The program is designed to reduce numerous risk factors. To capitalize on the power of positive messages, however, the *Go for the Gold* Wellness Program emphasizes *improving healthy behaviors* as opposed to *reducing unhealthy ones*. The focus is on increasing the proportion of employees who follow five healthy lifestyle characteristics: nonsmoker, normal BMI, good nutrition (5 or more portions of fruits and vegetables per day), regular exercise, and coping well with stress. The first four were based on research by Reeves, et al.[7] The fifth (coping well with stress) was added based on the importance demonstrated by the HERO study.[8]

	US Adult	Vanderbilt's Results					Vanderbilt's Goals		
	Average 2000[7]	2003	2004	2005	2006	2007	2008	2009	2010
n=		10,248	10,463	12,444	14,698	15,811	-	-	-
1. Nonsmoker	76.0%	88.5%	89.0%	89.7%	89.9%	90.1%	90.8%	91.5%	92.0%
2. Normal BMI (18.5 to 24.9)	40.1%	42.8%	43.6%	43.7%	42.5%	41.9%	43.9%	45.9%	48.0%
3. Eat 5 or more fruits & vegetables per day	23.3%	8.4%	14.6%	12.8%	12.8%	14.4%	17.9%	21.4%	25.0%
4. Regular exercise (30 min, ≥1 day/wk)	-	72.7%	79.1%	80.5%	80.7%	81.9%	82.9%	83.9%	85.0%
(30 min, 5 days/wk)	22.2%	14.2%	18.3%	18.2%	18.5%	19.7%	23.1%	26.5%	30.0%
5. Coping very well or fairly well with current stress load	-	88.5%	91.0%	91.4%	91.7%	92.1%	92.7%	93.3%	94.0%

Paired Analysis of Productivity

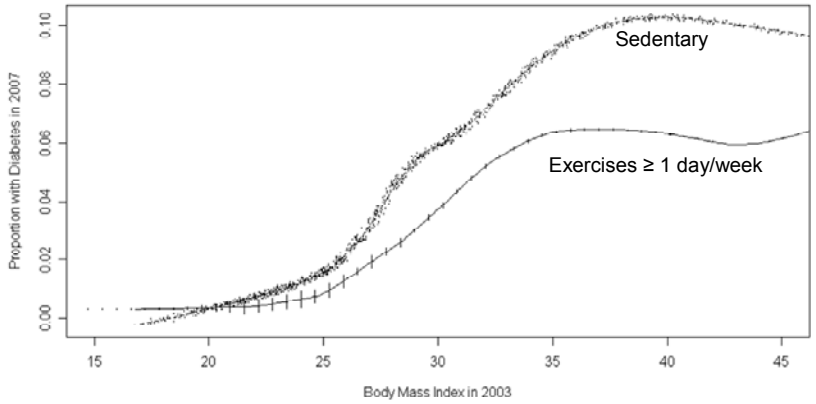
	2003	2004	2005	2006	2007	P Value
Emotional Problems.						<0.001[a]
"During the past four weeks, to what extent have you accomplished less than you would like in your work or other daily activities as a result of emotional problems, such as feeling depressed or anxious?"						<0.001[b]
None at all	3103 (72.7%)	3229 (75.6%)	3276 (76.7%)	3248 (76.1%)	3306 (77.4%)	
Slightly	922 (21.6%)	830 (19.4%)	810 (19.0%)	831 (19.5%)	766 (17.9%)	
Moderately	165 (3.9%)	167 (3.9%)	136 (3.2%)	143 (3.3%)	132 (3.1%)	
Quite a bit	75 (1.8%)	40 (0.9%)	44 (1.0%)	39 (0.9%)	57 (1.3%)	
Extremely	4 (0.1%)	3 (0.1%)	3 (0.1%)	8 (0.2%)	8 (0.2%)	

This table is based on the 4,269 people who answered this question in all 5 years; 243 did not answer the question in one or more years.
P values based on 2003 to 2007 comparisons. a – Wilcoxon signed-rank test. b – McNemar-Bowker Test.

Translational Impact - Exercise and Diabetes

Between 2003 and 2007, the percent of participants in the *Go for the Gold* program exercising one or more days per week increased from 72.7% to 81.9%. The results also demonstrated that for those who exercise one or more days per week, the risk of developing diabetes in the following 5 years was reduced to 2.0%, compared with 4.6% in those who were sedentary. Based on these findings, it is estimated that this increase in exercise prevented 38 employees from developing diabetes. The spline graph (right) shows the relationship between the 2003 BMI and exercise level and the risk of developing diabetes in the following 5 years. The graph shows that although the risk increases with BMI, those who exercise one or more days per week significantly lower the risk of diabetes compared with those who are sedentary. In addition to decreasing the risk of diabetes, others have demonstrated that exercise can reduce disability costs, medical costs, musculoskeletal pain, and mortality.[9] A 2002 report in The New England Journal of Medicine supports the idea that type 2 diabetes can be prevented or delayed with lifestyle interventions.[10]

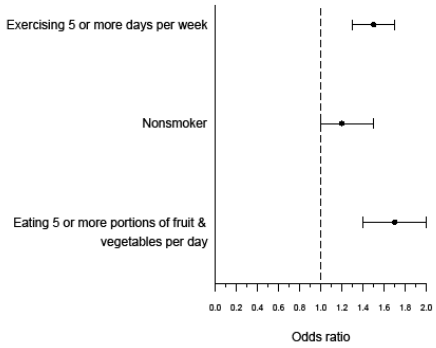
Exercise, Body Mass Index and Diabetes



Propensity Score Analysis

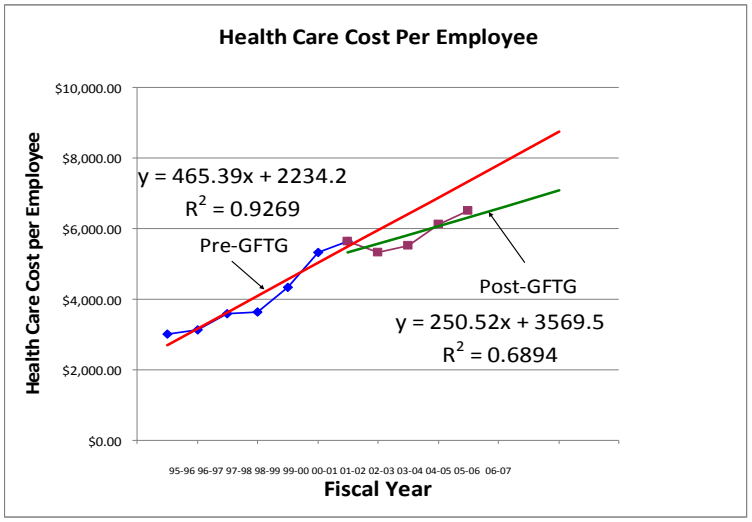
One of the challenges in evaluating a wellness program in a workplace setting is that randomizing employees is generally not an option. Thus, selection bias makes it difficult to assess the true impact of a program. Propensity score analysis[2] was employed to account for this effect and assess the impact of the program. For example, this analysis was used to answer the question "Does the Silver level (Wellness Actions Log - WAL) result in improvements in the healthy lifestyle characteristics, after controlling for the effect of more motivated people choosing to complete the Silver level?" A propensity score was created using the factors known in 2003 from the HRA. The score is the probability that a person would complete the WAL in 2004 based on a logistic regression model that included age, gender, the 15 risk factors defined by Edington[3] and the four healthy lifestyle characteristics.[7] After adjusting for the propensity score, three of the healthy lifestyle characteristics were significantly improved in 2005 for those who completed the WAL in 2004 compared with those who did not.

Although this evidence is not as strong as a randomized trial, it does provide support for the use of the WAL and helps justify the additional investment in this level of the program.



Financial

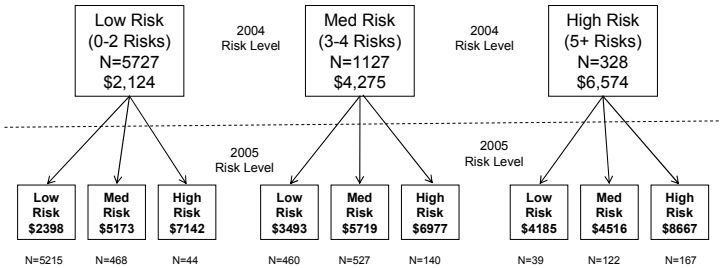
To assess whether health care costs have been reduced through improved health behavior from the *Go for the Gold* program, the health care costs before and after the *Go for the Gold* program were compared. This analysis includes all full-time employees. A comparison of *Go for the Gold* participants vs. non-participants is less meaningful since healthier, motivated employees self-select to join the program. If a wellness program is truly effective, it should impact the overall costs not only the cost of participants. The graph (top right) shows that before *Go for the Gold*, health care costs were increasing by $465.39 per year per employee compared with $250.52 per year after *Go for the Gold*. This represents a savings of $214.87 per employee per year. In addition to the *Go for the Gold* program, Vanderbilt also created a Health Care Cost Containment Committee and made numerous health care design changes during the past few years. The changes in costs are probably the result of these three initiatives.



The graph in the lower right panel shows Vanderbilt's health care costs associated with the risk level and change in risk level. This supports the approach of keeping low risk employees, low risk.

In addition to the financial savings calculated from the change in health care costs, the return on investment was estimated based on changes in the overall wellness score. Research has demonstrated that a one point improvement in the score corresponds to a saving in health care costs of $56.[11] The total investment in the *Go for the Gold* program during the first 5 years was $17,213,417. Based on the increases in the overall wellness score, the number of participants, and the $56/point assumption, the estimate is that the savings in health care cost is $11,868,449.60. There is substantial evidence that supports the ideas that in addition to this savings there is also a non-health care savings equal to 2 to 3 times this value.[12] The calculation of twice the direct to estimate the additional savings is $23,736,899.20. Therefore, the return on investment is 2.1:1 ($35,605,348.80/$17,213,417.00). This finding is in agreement with other evaluations of wellness programs.[4, 13-18]

Change in Employer Paid Amts for Medical + Pharmacy to Change in Health Risk Levels



Innovation

In 2002, Vanderbilt was the first university to win the Corporate Health Achievement Award from The American College of Occupational and Environmental Medicine. This award, designed to foster awareness of quality employee occupational and environmental medical programs, identifies model employee health programs and outstanding practices with measurable results, and encourages organizational self-assessment and continuous improvement.

In 2008, Vanderbilt has been recognized with two American Heart Association Fit-Friendly Companies awards, the Platinum Level Achievement Award (the highest level) and the Worksite Fitness Innovation Award. These awards are given to companies that demonstrate progressive leadership toward making health and wellness a priority for their workforce.

Summary and Vision for Future

Go for the Gold is a unique model of a wellness program and demonstrates that moving from an illness system to a wellness system makes economic sense. This program is effective among a diverse workforce and provides cost-effective incentives while avoiding heavy-handed approaches and could therefore be implemented in many settings. These results show that a workplace wellness program can work – if implemented appropriately. Great care must be taken to maintain the confidence of employees.

The incentive structure encourages high annual participation, which is essential for both program improvement and for unbiased results required to demonstrate true return on investment. Significant changes occurred in many of the modifiable risk factors between the first and second year, with continued progress in years three through five.

Online HRAs and other web-based resources have been used to leverage the investment in wellness for a return on investment. Self-reported data have been studied and found to be reliable.[3,18] The honor system is a cost-effective method of encouraging high participation and maintains the support of the workforce. As part of an academic medical center and research university, Vanderbilt's *Go for the Gold* program has benefited from collaborations with faculty who have expertise in behavioral intervention, disease prevention, and outcomes research. This highly skeptical research environment has also demanded a high level of evidence for the effectiveness of the health promotion program. This combination has resulted in the creation of a reproducible model of an effective workplace wellness program.

The vision for the future is to continue to create a culture of wellness and refine the *Go for the Gold* model by initiating new wellness outreach programs, learning from experts in various fields, and continuously assessing effectiveness of the program.

Appendix – References

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