

THE LIFE-CYCLE COST OF LIFE-STYLE: STRATEGIC IMPLICATIONS
OF HEALTH IN THE AIR FORCE

BY

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APPROVAL

The undersigned certify that this thesis meets master's-level standards of research, argumentation, and expression.

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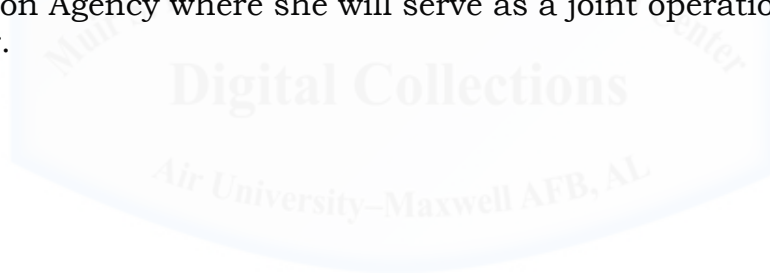
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ABSTRACT

For fiscal year 2012, the Department of Defense (DoD) will spend \$53 billion on health care. Without reform, the DoD estimates military health care spending to reach \$64 billion by 2015. General Norton Schwartz, the United States Air Force (USAF) Chief of Staff, has said the military needs to be careful about unbounded healthcare costs that “can force out military content elsewhere in the DoD portfolio.” Drastic cuts in the defense budget will likely intensify over the next ten years, as health care costs make fewer funds available for new technology, repairs to outdated equipment, and quality-of-life programs on military bases. This thesis examines the state of health, health care, and health costs within the Air Force. It evaluates the health of Air Force personnel and their immediate families (vital because military families, including retirees under age 65 and their dependents, make up 62% of the costs) addressing tobacco and alcohol abuse, obesity, physical activity, and nutritional fitness. This thesis compares the state of health of Airmen, dependents, and retirees with their counterparts in the other services and the American population at large. In addition, it compares the Air Force health care system with best practice in the other services and the civilian population, identifying reforms that might benefit the Air Force. It concludes that leadership policy changes together with holistic wellness programs could prove beneficial for Air Force budgets, individual readiness, and overall health outcomes of service personnel and their dependents. The Air Force can and should improve the health and health care of the larger Air Force family, ultimately improving readiness and leaving more funds for mission accomplishment.

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Introduction

Health and fitness are directly related to mission accomplishment.

- USAF Chief of Staff

To motivate Airmen to participate in a year-round physical conditioning program that emphasizes total fitness, to include proper aerobic conditioning, strength and flexibility training, and healthy eating. Health benefits from an active lifestyle will increase productivity, optimize health, and decrease absenteeism while maintaining a higher level of readiness.

- The Air Force Fitness Program Goal

For fiscal year 2012 (FY12), the Department of Defense (DoD) will spend \$53 billion on health care.¹ This amount equals 10% of the entire DoD budget, and according to DoD estimates it will grow to 12% of the total budget by 2015. By comparison, health care took 4.5% of the DoD budget in FY90.² General Norton Schwartz, the USAF Chief of Staff, has said the military needs to be careful about unbounded healthcare costs that “can force out military content elsewhere in the DoD portfolio,” and Secretary of Defense Robert Gates told an audience at the Eisenhower Library that “health care costs are eating the Defense Department alive.”³ Subsequent to those observations, the government adopted drastic reductions in defense spending over the next ten years. Since health care costs are unlikely to decline at the rate of the projected defense budget, health care will likely take an even greater percentage of defense spending in the coming decade. The rising cost of health care limits the funds for military activities, and troops in 2020 may “find themselves,”

¹ Department of Defense, *Defense Health Program Component Overview* (Washington, DC: Office of the Secretary of Defense [Comptroller], March 2012).

² Don J. Jansen, “Increases in Tricare Costs: Background and Options for Congress,” *Congressional Research Service* (14 May 2009): 1.

³ Robert Gates, speech on Defense Spending, Eisenhower Library, Abilene, Kansas, 8 May 2010; available at <http://www.defense.gov/speeches/speech.aspx?speechid=1467>.

as Lt Col Mark Duckenfield has predicted, “operating increasingly outdated equipment in order to free up resources within the defense budget for their health and retirement costs.”⁴

In addition to health costs cutting into operational funds, preventable health problems compromise optimal war-fighting capabilities. Military personnel suffering from chronic diseases associated with lifestyle choices such as tobacco and alcohol abuse, obesity, physical inactivity, and poor nutrition affect unit readiness when they are not prepared to perform at their best. These health problems interfere with national security interests by increasing costs and decreasing readiness. Despite these issues, the United States Air Force (USAF) will need to accomplish its mission. The time is right for an in-depth analysis of health in the USAF, because excess health care and lost productivity costs, as well as decreased individual readiness, directly affect Air Force mission accomplishment.

Nested cultures

There are many ways to analyze the health of an organization. Lifestyle behaviors, prescription drug use, medical practice and facility utilization, and environmental concerns can all contribute to bad health outcomes. This thesis will focus on four key areas of health: tobacco and alcohol abuse, obesity, physical activity, and nutritional fitness. These health issues can cause increased costs and decreased readiness, and they are interrelated both in their effects and in prevention. In addition, these health issues are readily amenable to reform with appropriate institutional support.

The United States Air Force is a subset of American culture, and many of its health habits derive from those of the nation writ large. Hence, any analysis of health and lifestyle in the Air Force must begin

⁴ Mark Duckenfield, “Fiscal Fetters: The Economic Imperatives of National Security in a Time of Austerity.” (AWC paper, Air University, 2012), 9.

with the nation that sustains the organization. According to the US Center for Disease Control (CDC) approximately 70% of premature deaths in the US are preventable, as are the direct and indirect costs associated with the excessive care required of those individuals.⁵ The majority of chronic diseases, and their associated costs, are preventable because health-damaging, but modifiable behaviors are the root cause. Poor nutrition, physical inactivity, excessive alcohol use, and tobacco use are the leading contributors to chronic disease and early death. Preventable chronic disease decreases individual productivity, performance, and quality of life, while also increasing unnecessary health care costs. With nearly 50% of the US population suffering from chronic illness, the chronic disease burden accounts for 75% of annual US health care expenses. The majority of those costs flow from diseases caused by unhealthy lifestyle behaviors.⁶

Similar to American culture, statistically significant numbers of service members, retirees, and their families suffer from chronic disease. The DoD loses millions of dollars each year from the consequences of unhealthy habits. TRICARE, the health care program for military members, retirees, and their families worldwide, conducted a 2006 study analyzing 4.3 million TRICARE Prime beneficiaries under age 65. It found that the DoD spends an estimated \$2.1B per year (approximately 16% of the FY06 TRICARE costs for this population) for medical care associated with tobacco, obesity, and high alcohol consumption. In addition, the DoD spends an additional \$965M each year for nonmedical costs related to those same unhealthy lifestyle habits. The nonmedical costs include absenteeism, presenteeism (lower-than-normal work

⁵ George E. Hardy, Jr, "The Burden of Chronic Disease: The Future is Prevention," *Preventing Chronic Disease*, (2004 April): 1 (2), A04, <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1183496/>

⁶ Centers for Disease Control and Prevention, "The Power to Prevent, The Call to Control: At a Glance 2009," Centers for Disease Control, <http://www.cdc.gov/chronicdisease/resources/publications/AAG/chronic.htm>

productivity), alcohol-related arrests, military personnel not deployable, and first-term attrition from the military. These unhealthy behaviors are significant draws on the military health care system, and according to the study, “if ignored, could crowd out other DoD spending priorities.”⁷

In terms of costs, the majority of health problems associated with tobacco, obesity, and alcohol “occur among an older population, whose health problems are exacerbated by years of unhealthy behaviors.”⁸ The average annual cost of these behaviors amounts to an extra \$895 per beneficiary within the TRICARE military health care system. That breaks down to an extra \$1038 per retiree and their dependents, and \$375 per active-duty dependent.⁹ The average annual cost of military beneficiaries’ unhealthy behaviors is slightly higher than the national average of approximately \$670 found by the Thomson Reuters Workforce Wellness Index. According to the Index, the highest costs are due to obesity/Body Mass Index (BMI) (\$400), high blood sugar, (\$150) and tobacco use (\$100), with the remaining \$20 attributed to alcohol, blood pressure, and cholesterol.¹⁰ Note that these costs include only the medical care and pharmaceutical costs, and do not include the costs of sick days and low productivity.

To reduce costs associated with chronic disease, many employers are investing in preventive wellness programs. Workplace disease prevention and wellness programs aim to improve overall employee health and lower company medical costs. As will be discussed in a later chapter, some companies have seen a 30% reduction in medical and

⁷ Timothy M. Dall et al., “Cost Associated With Being Overweight and With Obesity, High Alcohol Consumption, and Tobacco Use Within the Military Health System’s TRICARE Prime-Enrolled Population,” *American Journal of Health Promotion* 22, no. 2 (Nov-Dec 2007): 137.

⁸ Dall, 136.

⁹ Dall, 136.

¹⁰ John Commins, “Wellness Study Puts Price Tag on Unhealthy Behavior,” *Health Leaders Media*, 18 April 2011, <http://www.healthleadersmedia.com/page-2/HR-265077/Wellness-Study-Puts-Price-Tag-on-Unhealthy-Behavior>.

absenteeism costs in less than 4 years, or a 3-to-1 return on investment per employee participating in wellness programs.¹¹

US companies are implementing strategies to combat the negative effects of unhealthy behaviors. These strategies are proving beneficial to their budgets and productivity, as well as helping individuals improve their quality of life through positive health outcomes. Might similar strategies produce comparable beneficial results within the AF? With military health care costs on the rise, it is time to find out. Using the health issues introduced above, this thesis will discuss the health status of AF members and analyze the efficacy of AF organizational policies toward the promotion of positive lifestyle behaviors that can hold down health costs and ensure individual readiness.

A glimpse into the military health care system

Before analyzing the cost and readiness ramifications of individual lifestyle behaviors, it is critical to understand the structure of the military health care system. The Unified Medical Budget (UMB) in Figure 1 details DoD health care costs. For the FY12 UMB, 16% of the DoD medical budget goes for military medical personnel (active-duty and civilian), and 22% goes toward military construction projects and Medicare-eligible retirees, including their family members and survivors.¹² The majority of the funding—62%—goes toward the Defense Health Program (DHP), which provides direct care for all active-duty members and dependents, as well as military retirees under 65 and their dependents.¹³ In FY93, the first year of DHP, its funding totaled \$9.6B and the total UMB equaled \$15.2B.¹⁴ Since then, the DHP has grown to

¹¹ Lisa Nichols, "Workplace Wellness Programs," Art of Health Promotion Newsletter Survey results, from *American Journal of Health Promotion*, 2005. <http://lisa-nichols.suite101.com/workplace-wellness-programs-a27042>

¹² Department of Defense (Comptroller), *Defense Health Program Component Overview*.

¹³ Department of Defense (Comptroller), *Defense Health Program Component Overview*.

¹⁴ Department of Defense, *Defense Health Program* (Washington, DC: Office of the Secretary of Defense [Comptroller], March 2012).

\$33.7B and the total UMB has exploded to \$53B for FY12, a 250% increase in DHP funding.¹⁵ Although the DoD Medicare-eligible retiree health care fund was established in FY03, and research-and-development was added to the DHP budget in FY99 (approximately \$1B), the majority of the DHP increase occurred between FY04 and today, doubling from \$17B to \$33.7B in only 8 years.¹⁶

DHP funds are distributed among the Army, Navy, and Air Force for treatment received at Military Treatment Facilities (MTF), and to TRICARE private sector care. Since the Cold War, the DoD has significantly reduced the number of MTFs after a series of base closures, leading beneficiaries geographically separated from military facilities to seek the majority of their care in the private civilian sector under TRICARE. With today's MTF infrastructure, a majority of DHP costs go to TRICARE private sector care, as opposed to the Cold War era where MTFs provided the majority of the medical care.

The AF portion of the DHP budget totals \$6.6B, with approximately \$2.6B going toward DHP MTF care, \$3.1B toward military medical personnel, and \$600M toward Medicare-eligible retirees.¹⁷ However, this data does not directly correlate to the cost of the average AF member because DHP funding is distributed based on the medical infrastructure of each service.¹⁸ With only 13 inpatient facilities, 83 medical clinics, and 95 dental clinics, the AF has less infrastructure than the Army and Navy; therefore the AF receives only 20% of the MTF portion of the DHP budget. The Navy receives 23% of the funds and the Army gets 57% of the services MTF budget of \$13.7B since it has the most facilities. The

¹⁵ Department of Defense (Comptroller), *Defense Health Program*. This data also includes a 5.75% inflation rate each year.

¹⁶ Department of Defense (Comptroller), *Defense Health Program*.

¹⁷ Department of Defense (Comptroller), *Defense Health Program Component Overview*.

¹⁸ William Curley (Office of the Secretary of Defense, Comptroller), in discussion with the author, 6 March 2012.

remaining \$16.4B of the \$31.8B FY12 DHP direct-care budget goes to TRICARE private-sector care (ref Fig 1).¹⁹

Defense Health Program Component Overview

FY 2012 Unified Medical Budget (millions)							
<i>As of FY 2012 Appropriation (Includes \$1.2B S.M. OOD Funding)</i>							
<i>DHP Appropriation:</i>		Army	Navy	Air Force	TMA OPNS *	USHS	Total
O&M		\$6,817	\$3,010	\$2,578	\$2,838	\$150	\$16,404
Procurement		\$113	\$91	\$57	\$371	\$0	\$633
RDT&E		\$961	\$46	\$37	\$200	\$23	\$1,267
Total DHP		\$7,891	\$3,147	\$2,673	\$3,409	\$173	\$16,404
<i>Other Sources:</i>							
MILPERS *		\$2,677	\$2,689	\$3,109			\$8,475
MILCON		\$569	\$52	\$258	\$252		\$1,130
MERHCF O&M Receipts		\$539	\$394	\$396	\$11	\$7,953	\$9,292
MERHCF MILPERS Receipts		\$154	\$123	\$186			\$473
Total Budget Authority		\$11,830	\$6,405	\$6,631	\$3,672	\$173	\$24,356
* Includes JTF National Capital Region Medical							

Infrastructure									
	Army	Navy	Air Force	Total		Army	Navy	Air Force	Total
Inpatient Facilities	24	19	13	56	Military End Strength	26,748	27,715	31,544	86,007
Medical Clinics	163	119	83	365	Civilian FTEs	36,066	11,741	6,845	54,652
Dental Clinics	148	38	95	281	Total (FY 2012)	62,814	39,456	38,389	140,659
Veterinary Clinics	255	0	0	255	Percent Military	43%	70%	82%	

* TMA Military Included in Services cost
 * USHS (612) and JTF CAPMED Clinics (612) Included in TMA cost

Figure 1: FY2012 Unified Medical Budget (UMB)
Source: Office of the Secretary of Defense (Comptroller)

The annual allocated health care cost per active duty member, combining the costs for TRICARE private sector care and MTF care, was \$9,334.03 for FY10. This rate has increased from \$6,978.52 in FY05, and is projected to reach \$11,887 in FY17, using a 5.8% inflation rate.²⁰ This cost is an average across the DoD and includes the costs for all active-duty dependents. Unfortunately, the comptroller in the Office of the Secretary of Defense does not disaggregate the cost data, therefore an estimate of the average cost of health care per Airman cannot be directly compared with the average cost per soldier or seaman. In addition, the data does not differentiate between the annual costs of the active-duty member versus military dependents.

¹⁹ Department of Defense (Comptroller), *Defense Health Program Component Overview*.

²⁰ William Curley (Office of the Secretary of Defense, Comptroller), Medical Acceleration Factor data sheet given to the author, email, 6 March 2012.

According to 2009 data, the Kaiser Family Foundation reported that the annual health-care costs of the average US family were \$13,375 and the average single member was \$4,824.²¹ This approximates an average combined annual cost of \$9,099.50 for FY09. Compared with DoD averages for FY09, which totaled \$8,737.15, the civilian sector annual health care costs are quite similar. This data supports the assumption that rising health-care costs are a similar issue for both the DoD and the US as a whole.

For FY10 the DHP portion of the UMB was 55%. In two years, the amount has increased by 7% to 62%, and the DoD estimates that the budget allotment for DHP will increase to 65% by 2015.²² This is due to a projected increase “in the use of health care benefits by eligible beneficiaries who previously elected not to use it.”²³ In 2000, only 50% of military retirees were using TRICARE benefits; the current enrollment is 80%.²⁴ The increase is also due to health-care-cost inflation, expanded benefits (such as TRICARE for Reservists), and a higher utilization of health care services. Increased use of the more expensive TRICARE private-sector-care option is driving up TRICARE costs. In FY04, the utilization rates for outpatient care and inpatient care were 44% and 60% higher for TRICARE beneficiaries as opposed to the civilian sector, respectively.²⁵ In 2010, TRICARE users received 2.4 times as many health care services when compared to civilian counterparts.²⁶

²¹ John Fritze, “Average family health insurance policy: \$13,374, up 5%,” *USA Today*, 16 September 2009, http://www.usatoday.com/money/industries/health/2009-09-15-insurance-costs_N.htm.

²² Department of Defense, *Report of the Tenth Quadrennial Review of Military Compensation: Volume II Deferred and Noncash Compensation* (Washington, DC: July 2008), 45.

²³ Jansen, 4.

²⁴ William Curley (Office of the Secretary of Defense, Comptroller), in discussion with the author, 6 March 2012.

²⁵ Jansen, 2.

²⁶ Mieke Eoyang and Julie Zelnick, “Rising DOD Health Care Costs Threaten National Security,” *National Security Academy*, April 2012, 4.

Some analysts attribute this high rate of utilization to the lower out-of-pocket expense incurred by TRICARE beneficiaries, which in truth, may be a contributing factor. While individual cost plays a role, it is also important to analyze which category of beneficiary is creating the excess draws on the system, as well as the root cause of the chronic conditions that lead to the higher numbers of medical visits.

Out of the 9.6M military health care beneficiaries, approximately 18% are active duty members, 60% are DHP retirees and families, and 22% are Medicare eligible.²⁷ Medicare-eligible retirees receive TRICARE for Life (TFL) that covers almost all costs not covered by Medicare. These retirees and their dependents remain eligible for MTF care on a space-available basis, and can receive prescriptions from military pharmacies at no cost. With a majority of the funds going toward retirees and dependents, solutions for lowering future health care costs must address more than just the active-duty military member. Permanent solutions to the DoD health care cost crisis must attack the root cause of the problem and include a comprehensive prevention plan available to all military beneficiaries.

Why is this important?

Cost-savings and healthy behaviors are important issues for the future of our nation; therefore they should also play an important role in the development of future AF health strategies. At the intersection of preventive health and medical practices lie cost and effectiveness. In addition, with the USAF website prioritizing the development and care of Airmen and their families, as well as aiming to improve the quality of life for all members, helping Airmen becoming healthier is the right thing to

²⁷ William Curley (Office of the Secretary of Defense, Comptroller), in discussion with and information provided to the author, 6 March 2012 (% breakdown is based on 2008 data).

do.²⁸ Rooted in the foundation of the AF service, and emphasized throughout its history by each Chief of Staff of the Air Force (CSAF), the AF expects all members to live by the highest standards. Ultimately, the AF should have health strategies that are fiscally smart and morally sound, while also ensuring mission accomplishment.

This thesis will analyze the Air Force's status in relation to the lifestyle behaviors associated with tobacco, alcohol, obesity, physical inactivity, and nutrition. How is the Air Force currently doing with respect to these lifestyle issues? How does the Air Force compare to the other services, the DoD as a whole, and the US population at large? Do best-practice programs, in the civilian sector or sister services, suggest reforms that the Air Force might embrace in the future? What are the costs and benefits of those reforms? If rising health-care costs and decreased readiness of members can be attributed to preventable unhealthy lifestyle behaviors within the Air Force, for the good of the service and as a role model to the nation, it is essential to offer solutions to ensure a mission-ready force for the future.

²⁸ USAF Website, "Air Force Priorities," USAF, <https://www.my.af.mil> (accessed 13 May 2012) & USAF Website, "AF 101 briefing (Version 55 – Updated 5 April 2012)," USAF, <https://www.my.af.mil> (accessed 13 May 2012).

Chapter 1

Tobacco & Alcohol Abuse

Lifestyle choices associated with tobacco and alcohol abuse significantly diminish productivity and increase health care costs. Smoking and drinking are two of the most preventable causes of death in the US, and most abusers use both substances together. Each year, the US health care expenditure for alcohol and tobacco is \$223.5B and \$193B, respectively.¹ The DoD itself spends over \$2B in medical costs associated with these two behaviors.² Many reputable studies have concluded that alcohol and tobacco abuse are both significant contributors to increased health-care costs, decreased individual productivity, decreased unit readiness, preventable chronic disease, and premature death in America, the DoD, and the US Air Force. While the relative cost to the DoD appears to be significantly smaller than the US as a whole, indicating the possibility of low gains from an investment in tobacco and alcohol behaviors, it is still vital to analyze these particular health issues.

Tobacco

Tobacco use damages health and creates unnecessary health-care costs over the lifetime of an individual. Smoking is a causal factor for cancer of the larynx, esophagus, and mouth, as well as a contributor to the development of pancreatic, kidney, and prostate cancer.³ It also

¹ Centers for Disease Control and Prevention, "Excessive Drinking Costs U.S. \$223.5 Billion," Centers for Disease Control, <http://www.cdc.gov/Features/AlcoholConsumption/> & Centers for Disease Control and Prevention, "Economic Facts About U.S. Tobacco Production and Use," Centers for Disease Control, http://www.cdc.gov/tobacco/data_statistics/fact_sheets/economics/econ_facts/index.htm

² Markeshia Ricks, "Targeting tobacco use," *Air Force Times*, 23 April 2012.

³ Grantmakers in Health, "Healthy Behaviors: Addressing Chronic Disease at Its Roots," *Based on a Grantmakers in Health Issue Dialogue*, Issue Brief 19, (February 2004), 4.

increases the risks of lung cancer, chronic obstructive pulmonary disease (COPD) various periodontal diseases, as well as cardiovascular and respiratory disease.⁴

Each year, there are 443,000 US deaths (including deaths from secondhand smoke) attributed to cigarette smoking. Smoking causes approximately \$193B in annual health-related economic losses (\$96B for direct medical care and \$97B for lost productivity).⁵ According to a 2004 report, the number of diseases caused by smoking, and the associated medical costs to treat them, continue to increase. Smoking harms nearly every organ in the body, causes generally poorer health, and can require extensive and costly medical treatment.⁶

A 2006 study found that approximately 1.4 million TRICARE beneficiaries (47%) under age 65, including active-duty personnel, retirees, and dependents, were current or former smokers, contributing to a total loss of \$564M in direct health care costs each year.⁷ Recent data, according to a 2012 article in the Air Force Times, attributed \$2B in annual health care costs to tobacco consumption and its associated ailments. The article mentioned tobacco use as the No. 1 preventable health care cost, and thus the driving force in the decision to make more restrictive tobacco regulations.⁸ In addition, the Veterans Administration (VA) reports that tobacco use among military retirees is at 22%. In 2008, the VA reported that costs for tobacco-related diseases such as COPD

⁴ Centers for Disease Control and Prevention, "Tobacco Use," Centers for Disease Control, <http://www.cdc.gov/chronicdisease/resources/publications/AAG/osh.htm>

⁵ CDC, "Economic Facts About U.S. Tobacco Production and Use."

⁶ Department of Health and Human Services, *The Health Consequences of Smoking: A Report of the Surgeon General*, (Atlanta: U.S. Department of Health and Human Services [Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health], 2004), 14.

⁷ Legacy for Health, "Tobacco Use in the Military," *Legacy Study*, October 2010. http://www.legacyforhealth.org/PDFPublications/Military_FactSheet.pdf & Timothy M. Dall et al., "Cost Associated With Being Overweight and With Obesity, High Alcohol Consumption, and Tobacco Use Within the Military Health System's TRICARE Prime-Enrolled Population," *American Journal of Health Promotion* 22, no. 2 (Nov-Dec 2007): 135.

⁸ Ricks, "Targeting tobacco use."

and arteriosclerosis, exceed \$5B and \$1.3B, respectively.⁹ These reports point to smoking habits as a potential high draw on the military medical system.

Another tobacco-related health care cost ties to individual productivity. The estimated productivity loss due to smoking equates to 386,000 lost workdays each year, due to excessive absenteeism and below-normal work performance.¹⁰ This results in over \$54M in DoD productivity loss each year.¹¹ With smoke breaks also contributing to lost productivity during the workday, smoking plays a role in increased DoD costs, and decreased productivity of military members.

On the contrary, other experts in the field have concluded that early deaths attributed to smoking actually result in a cost savings for the overall health care system. A 1997 study found that health care costs for smokers were up to 40% higher when compared to nonsmokers, due to the excessive costs for the treatment of preventive diseases in the years leading up to their death. However, the study concluded that over the long term nonsmokers live 10 years longer when compared to smokers, creating up to a 7% overall greater draw on the health care system.¹² The cold calculus of this analysis did not attempt to measure the cost of young dependents of military personnel who might suffer the immediate health effects of second-hand smoking but then leave the military health care system before having the opportunity to save the system money by dying prematurely. Still, the study does establish that tobacco use may actually save the DoD and the AF money over the long term. The argument for reducing the level of smoking in the AF,

⁹ Institute of Medicine of the National Academies, *Combating Tobacco Use in Military and Veteran Populations*, ed. S. Bondurant and R. Wedge. (Washington DC: The National Academies Press, 2009), 307.

http://www.nap.edu/openbook.php?record_id=12632&page=R1.

¹⁰ Dall, 135.

¹¹ Dall, 135.

¹² Jan Barendregt, Luc Bonneux, and Paul J. van der Maas, "The Health Care Costs of Smoking," *The New England Journal of Medicine* 337, (October 1997): 1052, <http://www.nejm.org/doi/pdf/10.1056/NEJM199710093371506>.

therefore, has less to do with cost than it does with readiness and the ethics of promoting general well-being.

The DoD, the AF, and Tobacco Use

It is not only important to look at health care costs, it is critical to analyze military readiness as it relates to tobacco use. Tobacco use can compromise readiness.¹³ Smoking can lead to a decreased cognitive ability and an impaired respiratory function that affects performance and the overall readiness of service members. Smokers are also more likely to sustain injuries, and have lower visual acuity and poorer night vision than non-smokers.¹⁴ In addition, tobacco use has been “found to be one of the best predictors of military training failure.” According to AF Fitness Management System data, smokers are more likely to perform poorly on their military fitness tests.¹⁵ Tobacco use significantly affects military readiness.

For active-duty military, the 2008 *Department of Defense Survey of Health Related Behaviors Among Active Duty Military Personnel* (HRB) revealed 31% of military personnel as smokers (defined as having smoked within the last month), and 14% use smokeless tobacco.¹⁶ The 1995 HRB study revealed 31.9% of military members as tobacco users.¹⁷ While a significant drop in the smoking rate occurred between 1980 (51%) and 1995 (31.9%), the rate has steadied over the last 15 years. While it is worthwhile to note that the rate of heavy smoking within the

¹³ Air Force Medical Operations Agency, *Air Force Healthy Airman Report: 2010* (San Antonio, TX: Health Promotion Operations [AFMOA/SGHC], 2010), 6.

¹⁴ Air Force Medical Operations Agency, *Air Force Healthy Airman Report: 2010*, 6.

¹⁵ Air Force Medical Operations Agency, *Air Force Healthy Airman Report: 2010*, 7.

¹⁶ Robert Bray, et al., *2008 Department of Defense Survey of Health Related Behaviors Among Active Duty Military Personnel*, RTI/10940-FR (Research Triangle Park, NC: Research Triangle Institute, September 2009), 73.

¹⁷ Robert Bray, et al., *1995 Department of Defense Survey of Health Related Behaviors Among Military Personnel*, RTI/6010/06-FR (Research Triangle Park, NC: Research Triangle Institute, December 1995), ES-1.

military has significantly decreased from 34% in 1980, to 10% in 2008, regular smoking amongst personnel is a continuing problem.¹⁸

Out of current military smokers, 40% started smoking once they joined the service, and the primary reasons given for smoking range from stress management and boredom to an environment that encourages smoking.¹⁹ A 2010 study in *Military Medicine* found that military leadership, including policy-makers and installation-level tobacco control managers, “believed that line leadership view tobacco control as a low priority that has minimal impact on successful mission completion.” Smokers also noted that cultural factors incentivize tobacco use, including the low cost and easy accessibility of tobacco products on base, smoke breaks, and uneven or unknown enforcement of base tobacco policies.²⁰ In addition, a 2008 study found that political pressure and existing incentives (notably tobacco subsidies and the system in which tobacco sales fund base Morale, Welfare, and Recreation programs) weaken military tobacco control policies.²¹ The military culture, and its apathetic leadership, could possibly be a source of the problem by promoting and incentivizing tobacco use.

In 2000, Air Force psychologist Wayne Talcott, a co-chair of the DoD Alcohol Abuse and Tobacco Use Reduction Committee called for the DoD to meet the U.S. Department of Health and Human Services’ (HHS) Healthy People 2010 goal of a 12% smoking rate.²² While the DoD as a

¹⁸ Bray, et al., *2008 Department of Defense Survey of Health Related Behaviors Among Active Duty Military Personnel*, 73.

¹⁹ W.S. Poston, et al, “Smoking and deployment: perspectives of junior-enlisted U.S. Air Force and U.S. Army personnel and their supervisors,” *Military Medicine* 173, no. 5 (May 2008): 441.

²⁰ W.S. Poston, et al, “Military line leadership and tobacco control: perspectives of military policy leaders and tobacco control managers,” *Military Medicine* 175, no.10 (October 2010): 811.

²¹ Sarah Arvey and Ruth Malone, “Advance and retreat: tobacco control policy in the U.S. military,” *Military Medicine* 173, no.10 (October 2008): 985.

²² Staff Sergeant Kathleen T. Rehm, “Less Smoking Improves Troops’ Health, Cuts Healthcare Costs,” *American Forces Press Service*, 6 June 2000.
<http://usmilitary.about.com/library/milinfo/milarticles/blsmoking.htm>

whole still falls well short of the goal with its current rate at 31%, the Air Force has the lowest smoking rate within the DoD. However, even the AF has not met the HHS goal, as the latest smoking statistics reveal that 23% of Air Force members are smokers.²³ This is slightly higher than the national average of 20.6%, reported in 2008, and significantly higher than the HHS goal.²⁴ The lower rate for AF smoking potentially stems from differences in AF culture, restrictive smoking policies, or robust cessation programs, all discussed later in this chapter.

The president of the American Cancer Society Cancer Action Network has said, “the trend toward a smoke-free country is going on everywhere.”²⁵ For example, there are at least 704 100% smoke-free college and university campuses (including residential housing facilities) in the US as of 1 April 2012.²⁶ It is understandable that the majority of college campuses would enact smoke-free policies to encourage healthier habits among young adults. Not only is it better for the individual learning environment and better for individual health, but it is the right thing for colleges to do to support healthy behaviors among the nation’s young adult population. However, college campuses are not the only influences on the youth of America. With the majority of AF smokers being enlisted men between the ages of 18 and 29 years old, the AF can also influence a portion of the young adult population.²⁷

What is the AF doing about tobacco use?

²³ Bray, et al., *2008 Department of Defense Survey of Health Related Behaviors Among Active Duty Military Personnel*, 75.

²⁴ Department of Health and Human Services, *Ending the Tobacco Epidemic*. (Washington, DC: Office of the Assistant Secretary for Health, November 2010), 9.

²⁵ Judy Fortin, “Smoke-free college trend growing,” *CNN*, 12 November 2007, http://articles.cnn.com/2007-11-12/health/hm.smokefree.campus_1_smoke-free-college-smoking-indoors-cancer-society?_s=PM:HEALTH.

²⁶ American Nonsmokers’ Rights Foundation, “U.S. Colleges and Universities with Smokefree Air Policies,” April 1, 2012, <http://no-smoke.org/pdf/smokefreecollegesuniversities.pdf> 2012.

²⁷ Ricks, “Targeting tobacco use.”

Similar to the zero-tolerance policy exhibited by US college campuses, the official AF goal is a tobacco-free service, according to the recently released AFI 40-102, which sets the tone for tobacco cessation within the AF.²⁸ Littered cigarette butts and other detritus of smoking are a nuisance and embarrassment for the AF. Secondhand smoke exposure is also an annoyance and health issue for nonsmoking AF personnel. Over 50,000 non-smokers die in the US each year from secondhand smoke exposure.²⁹ It is the third leading cause of preventable death.³⁰ Tobacco smoke contains over one hundred recognized carcinogens and a recent study of toxin levels related to outdoor smoking demonstrated that passers-by could be exposed to significant levels of cotinine.³¹ Secondhand smoke can cause heart disease, lung cancer, sudden infant death syndrome (SIDS), acute respiratory infections, ear problems, and asthma attacks.³² Children exposed to secondhand smoke are at increased risk for asthma, SIDS, lower respiratory tract infections, and middle ear infections. Military members with sick family members can be distracted, less productive, and unready to meet mission demands.

Current military programs and practices, which mostly rely on individual responsibility, are not fixing the problem since smoking rates have remained unchanged over the last 15 years. Studies have shown that interventions that “rely solely on personal self-control or willpower are unlikely to change long-term behavior unless other factors in a

²⁸ Air Force Instruction (AFI) 40-102. *Tobacco Use in the Air Force*, 26 March 2012, 3.

²⁹ Centers for Disease Control and Prevention, “Tobacco-Related Mortality,” Centers for Disease Control, http://www.cdc.gov/tobacco/data_statistics/fact_sheets/health_effects/tobacco_related_mortality/.

³⁰ Americans for Nonsmokers’ Rights, “Secondhand Smoke: The Science,” November 2006, <http://www1.umn.edu/perio/tobacco/secondhandsmoke.html>

³¹ University of Georgia, “Study raises concerns about outdoor second-hand smoke,” *Science Daily*, 18 November 2009, <http://www.sciencedaily.com/releases/2009/11/091118154619.htm>.

³² Department of Health and Human Services, *Ending the Tobacco Epidemic*, 9.

person's environment, such as family relationships, work situations, and social norms, happen to be aligned to support a change.”³³ According to the CDC, 70% of smokers want to quit, and the HAR similarly found that 53% of AF tobacco users try to quit each year.³⁴ The AF can help its personnel and dependents and help itself by making it easier to resist or quit smoking.

The AF is implementing various interventions to assist individuals in their quest to quit tobacco, as well as providing education and policy recommendations to prevent new recruits from developing the habit. This includes providing a variety of cessation programs and helping people take advantage of them.

It is extremely important for cessation options to be available and promoted to the tobacco users wanting to quit. Medication, tobacco cessation classes, and telephone-quit-lines are the most used strategies by Airmen in their attempts to quit tobacco. USAF Health and Wellness Centers (HAWCs) are one means for promoting these types of health strategies at each Air Force Base. HAWC programs began in January of 1996, with a CSAF memorandum accompanying Programming Guidance Letter 94-8 (dated October 1995), establishing AF HAWCs.³⁵ A 1998 Air Command and Staff College paper touted the advantages of the new HAWC as a potential site of one-stop shopping for healthy lifestyle behaviors. HAWC programs and services are available to all active duty/reservists/retirees and their families, and assigned civilian employees. The paper concluded, “If properly implemented and marketed, the advantages of this Community-Based Model are that

³³ Grantmakers in Health, “Healthy Behaviors: Addressing Chronic Disease at Its Roots,” 9.

³⁴ Department of Health and Human Services, *The Health Consequences of Smoking: A Report of the Surgeon General*, 7 & Air Force Medical Operations Agency, *Air Force Healthy Airman Report: 2010*, 9.

³⁵ Programming Guidance Letter (PGL) 94-8, “Establishing Health and Wellness Centers” (Washington, DC: HQ USAF, 1 October 1995).

HAWCs will provide an easily identifiable, inviting, and credible place to go for wellness activities.”³⁶

AF Health Promotion Operations (AF HPO) is targeting interventions at all levels of the intervention pyramid (see Fig 2), placing the most focus on health communication strategies through AF HAWCs, while also ensuring availability and awareness of the standardized programs offered by each installation.³⁷ Types of health communication strategies include: identifying high-risk groups to provide them with education and discourage tobacco use, educating leaders on role-modeling and mentoring healthy behaviors and the negative effects of tobacco use, standardizing web-based programs, support groups, and telephone help lines, and assisting unit commanders with individual unit-cessation programs.³⁸ While the implementation of tracking procedures is currently inconsistent between AF HAWCs, and current data is limited on individual HAWC programs, AF HPO is working to consolidate the information and develop a more thorough process for data collection.³⁹

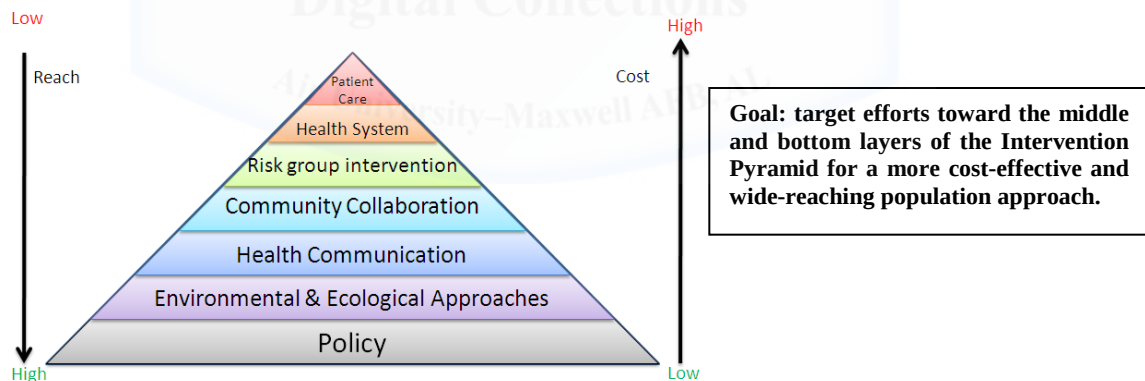


Figure 2: Intervention Pyramid

Source: 2010 Healthy Airman Report, AF Health Promotion Operations

Currently, AF HPO is working to achieve the following objectives concerning AF tobacco use: decrease tobacco use within the AF, prevent

³⁶ Connie D. Rocco, “Wellness at Air Command and Staff College: Impacting Total Force Readiness Through Tomorrow’s Leaders,” Air Command and Staff College, Air University, April 1998, 21.

³⁷ Air Force Medical Operations Agency, *Air Force Healthy Airman Report: 2010*, 3.

³⁸ AFI 40-102. *Tobacco Use in the Air Force*, 11-12.

³⁹ Air Force Medical Operations Agency, *Air Force Healthy Airman Report: 2010*, 9.

tobacco use initiation, decrease supportive environments for tobacco use, and increase the availability of tobacco cessation options. AF HPO does not have specific strategies to target the first two objectives; however, those objectives are promoted indirectly through a focus on the third objective: the environment. The 2010 HAR states, “Airmen are more likely to use tobacco in environments without policies restricting its use or if their peers and/or leadership use tobacco. AF tobacco-control strategies have shifted from focusing solely on changing the behavior of individual tobacco users towards [sic] a more comprehensive approach that targets the environment and promotes changes in social norms.”⁴⁰ While the focus of AF HPO is the AF environment, as will be discussed below, the strategies addressing changing the environment within the AF are relatively limited. Lastly, AF HPO focuses on the fourth objective: tobacco cessation options. This includes not only the availability of tobacco cessation programs offered by the AF HAWCs, but also the promotion of their availability to users.

It is extremely important to acknowledge the culture and environment as it relates to tobacco use. AF HPO is currently addressing the issue by gathering unit-level data “to assess environments supporting tobacco use.”⁴¹ Additionally, as previously mentioned, the AF has recently released the new AFI 40-102, “Tobacco Use in the Air Force.” According to the regulation, “Major changes include: designation of tobacco-free medical campuses; updated Designated Tobacco Areas and areas where tobacco use is prohibited; updated policies on tobacco use among Airmen in formal training programs; revised interventions to prevent and decrease tobacco use; and revised delineation of responsibilities to promote a tobacco-free Air Force.”⁴²

⁴⁰ Air Force Medical Operations Agency, *Air Force Healthy Airman Report: 2010*, 8.

⁴¹ Air Force Medical Operations Agency, *Air Force Healthy Airman Report: 2010*, 3.

⁴² AFI 40-102. *Tobacco Use in the Air Force*, 2.

According to the new regulation the ultimate goal is, “a tobacco-free AF.” As a start to changing the environment around AF bases, the AF has now regulated tobacco-free medical campuses “to protect the health of patients, employees, and visitors.”⁴³ Medical campuses are defined as the area surrounding the clinic or hospital; this includes parking lots, lawns, and any other outdoor area contiguous with the medical center. Additionally, the medical group HAWCs will ensure that active-duty members, family members, and retirees have access to established tobacco prevention and cessation programs. This includes the promotion of such programs to tobacco users other than just the active duty military member. Continuing with an attempt at shifting the AF culture toward a completely tobacco-free environment, the regulation also requires unit commanders and supervisors to “implement policies and practices creating a supportive environment that assists tobacco cessation and eliminates conflicting messages on tobacco use.” Commanders are also required to “implement policies that ensure tobacco use in itself does not entitle tobacco users to additional break time from duty compared with non-tobacco users.”⁴⁴ This strategy, as long as it is effectively enforced, can contribute to increased productivity with less smoke breaks taken during the workday.

A major change to future tobacco use is the recent prohibition of tobacco on AF installations, except in designated tobacco areas (DTAs) and housing units. While not a completely tobacco-free base policy, it does limit the availability of tobacco use areas and protects non-tobacco users from exposure to secondhand smoke. The regulation also prohibits the sale of tobacco in medical and base services facilities, as well as vending machines, and prevents tobacco companies from advertising in AF print and electronic publications. However, non-services controlled facilities will still be able to sell and subsidize tobacco products on base.⁴⁵

⁴³ AFI 40-102. *Tobacco Use in the Air Force*, 3.

⁴⁴ AFI 40-102. *Tobacco Use in the Air Force*, 5.

⁴⁵ AFI 40-102. *Tobacco Use in the Air Force*, 10.

The new regulation's banner of "tobacco-free" AF bases is a step in the right direction, a step that only one other service has taken in the past. In 1993, the captain of the USS *Roosevelt* pulled cigarettes from the ship's Navy Exchange and banned all smoking. His reaction was in response to the American Medical Association's January 1993 warning that secondhand smoke caused cancer. The Navy planned to ban smoking on all ships with the goal of a smoke-free fleet by 2000 until congressional pressures led to a requirement in the U.S. Code that Navy ships must sell tobacco. This eliminated the possibility that any future Navy leader could ban smoking on ships without an act of Congress to reverse the federal law.⁴⁶

Despite not being able to enforce smoke-free ships, the Navy has recently enacted more restrictive tobacco policies on a more limited scale. As of 31 Dec 2010, the submarine force has gone smoke-free. Through this initiative, the Navy has also focused efforts toward tobacco cessation programs that are available to submarine sailors and their families.

While no official AF-wide policy currently exists to proscribe completely the use of tobacco on AF bases, an AF spokesperson has said, "In absence of Air Force policy, there is nothing to prevent an individual base or command from going forth," in instituting tobacco free policies.⁴⁷ In response, many group and wing-level leaders have instituted their own aggressive measures. Aviano Air Base, Italy, has stricter policies than most. One group commander has prohibited tobacco use in uniform and the base has introduced a comprehensive tobacco cessation program, which has seen a 78% success rate.⁴⁸ Misawa Air Base, Japan, and

⁴⁶ Naphtali Offen, et al, "Forcing the Navy to Sell Cigarettes on Ships: How the Tobacco Industry and Politicians Torpedoed Navy Tobacco Control," *American Journal of Public Health* 101, no. 3 (March 2011): 404.

⁴⁷ James Joyner, "Air Force Considers Smoking Ban," *Outside the Beltway*, 8 May 2007, http://www.outsidethebeltway.com/air_force_considers_smoking_ban/.

⁴⁸ Kent Harris, "Air Force tobacco bans are gaining steam," *Stars and Stripes*, 29 April 2007, <http://www.stripes.com/news/air-force-tobacco-bans-are-gaining-steam-1.63302>.

Mountain Home Air Force Base have introduced bans on smoking within base dorms.⁴⁹ AFI 40-102 allows commanders the flexibility to be more restrictive in their policy-making toward the use of tobacco, with the goal of seeing a decrease in the overall smoking rates. Some commanders seem to realize that helping military members quit smoking and preventing young recruits from starting to smoke, through aggressive policy changes, is simply the right thing to do. Ultimately, it improves readiness and contributes to a professional, productive, and healthy work environment.

The new AFI 40-102 demonstrates the AF is currently adopting strategies to change the AF environment away from the promotion of tobacco use and its associated behaviors. However, in order for these regulation changes to constitute real behavior modifications with respect to tobacco, this analysis must address the incentives for tobacco users.

A primary incentive is the decreased cost of tobacco products purchased on base. Focus groups amongst AF and Army junior personnel have revealed that liberal smoke breaks with social interaction encouraged them to smoke, along with the cheap tobacco products sold at the military bases.⁵⁰ While the new regulation limits smoke breaks, the tobacco subsidies remain in place at all Air Force bases, encouraging tobacco use. The exact amount of subsidy varies by AF base, but the average is approximately 20%. At Maxwell Air Force Base, an Airman can purchase a carton of Marlboro Lights for \$41.95, as opposed to \$51.69 off base.⁵¹ Some of the variation is a result of the off-base tax

⁴⁹ Senior Airman Stephanie Torres, "Smoking ban takes effect at Misawa," *AF.mil News*, 30 April 2009, <http://www.misawa.af.mil/news/story.asp?id=123146924> & Mountain Home Air Force Base, "Smoking ban in Dorms scheduled 1 April," *AF.mil News*, 31 March 2011, <http://www.mountainhome.af.mil/news/story.asp?id=123249316>

⁵⁰ C.K. Haddock, et al., "Factors which influence tobacco use among junior enlisted personnel in the United States Army and Air Force: a formative research study," *American Journal of Health Promotion* 23, no.4, (March-April 2009): 241-6.

⁵¹ Personal cost comparison of cigarettes at Maxwell AFB and in Montgomery, AL.

rates for cigarettes, which is dependent on the state: VA taxes at \$.03 per pack while the tax rate is \$2.05 per pack in NJ.⁵²

One civilian study found that for every 10% increase in the price of tobacco products, there was a corresponding decrease of 4% in consumption rates, particularly in younger populations.⁵³ Many states have recently raised the taxes on cigarettes and have implemented various tobacco-control programs to increase tobacco prices, establish strict smoke-free policies, and provide free cessation services. Such reforms have resulted in cutting youth smoking rates by 50%, decreasing the rates of lung cancer, and lowering tobacco consumption rates.⁵⁴

According to “Healthy Behaviors,” a 2004 issue paper by Grantmakers in Health, a nonprofit organization dedicated to helping improve the health of all people, limiting access and places of use are effective strategies to combat tobacco use.⁵⁵ Clean air policies and increased taxes on tobacco products have decreased average cigarette consumption, increased the quit rates, and resulted in lower numbers of younger first time smokers.⁵⁶ Changing the environment and the availability of tobacco products within the civilian sector has led to reductions in tobacco use; there is potential that the DoD, and the AF, can also see a change in tobacco use behaviors using similar measures.

President Bill Clinton’s Executive Order 13058 banned smoking in all spaces used by the Executive Branch of the Federal Government.⁵⁷ Since that 1997 action, however, the federal government has done little to limit smoking. H.R. 4131: Smoke-Free Federal Workplace Act,

⁵² Grantmakers in Health, “Healthy Behaviors: Addressing Chronic Disease at Its Roots,” 15.

⁵³ Department of Health and Human Services, *Ending the Tobacco Epidemic*, 14.

⁵⁴ Department of Health and Human Services, *Ending the Tobacco Epidemic*, 16.

⁵⁵ Grantmakers in Health mission according to their website: www.gih.org.

⁵⁶ Grantmakers in Health, “Healthy Behaviors: Addressing Chronic Disease at Its Roots,” 15.

⁵⁷ Executive Order 13058, Protecting Federal Employees and the Public From Exposure to Tobacco Smoke in the Federal Workplace, 9 August 1997.

proposed in 2009, never became law.⁵⁸ With college campuses regulating smoke-free environments and various states adopting strategies to decrease civilian smoking rates, it appears that the trend toward a smoke-free nation is mainly occurring within the private sector and local and state governments, rather than through federal action.

Similar to the Navy's efforts, the AF almost led the way toward tobacco-free installations in 2007. At the time, AF officials announced that a widespread ban on all tobacco products was possible. This was in recognition of the fact the AF could not get to the HHS goal of a 12% smoking rate without more innovative and drastic measures.⁵⁹ Air Force Material Command (AFMC) was leading the effort, but with civilians making up 70% of the command's workforce, the policy changes never occurred. At the time, AFMC declined to discuss specific details, and the AF acknowledged it was seeking solutions for the future. One of those solutions ended up being the re-written AFI 40-102 regulation that is more restrictive than previous versions, but still falls short of complete elimination of tobacco on AF installations. If the AF is waiting for the federal government to institute DoD-wide policies in response to tobacco use, it may never happen. With a slightly more restrictive regulation, the AF can take the lead in this important health area.

Alcohol

Alcohol abuse can cause severe damage to the liver. The liver has many important functions including the storage of vital nutrients, the production of proteins and enzymes, and the metabolization of harmful toxins like those from alcohol. Heavy alcohol use can lead to liver disease and mental health problems, as well as excess stress, the abuse of family and friends, and even illegal behavior. It is also a concern for

⁵⁸ HR 4131, 111th Congress, *Smoke-Free Federal Workplace Act* (19 November 2009), <http://www.govtrack.us/congress/bills/111/hr4131>.

⁵⁹ Joyner, "Air Force Considers Smoking Ban."

military members because it can adversely affect productivity, promotions, absenteeism, or arrest.

The DoD, the AF, and Alcohol Abuse

Alcohol abuse increases health care costs, through direct care and lost productivity. A study done in 1998 found that alcohol abuse and alcoholism costs the nation \$148B each year. Lost productivity contributed to two-thirds of those costs—with 45.7% due to alcohol related illness and 21.2% attributed to premature death. The other third accounts for the treatment of alcohol disorders, and the costs associated with alcohol-related vehicular accidents and crime.⁶⁰

In the 2006 TRICARE study of beneficiaries under the age of 65, the estimated costs for detoxification and for treatment of accidents and medical cases associated with high alcohol consumption reached approximately \$425M. The survey authors concluded that more effective initiatives could have immediate payoffs, including the reduction of alcohol abuse.⁶¹ The 2002 HRB found that binge drinkers are more absent from work and less productive when compared to other active-duty personnel. The estimated productivity loss for the DoD is 548,000 workdays each year, costing an estimated \$67M. Every year, an estimated 2200 initial enlistees separate from the military before completing their service commitments due to alcohol-related reasons, costing the DoD \$108M annually.⁶²

As far as readiness is concerned, alcohol plays a large role in military inefficiencies and increased cost, particularly when an individual is not ready to conduct his or her military mission. In 2006, estimates

⁶⁰ National Institute on Alcohol Abuse and Alcoholism, “Alcohol and Drug Abuse Costs U.S. \$246 billion, Says NIH Report,” News Briefs (May-June 1998). <http://www.ndsn.org/mayjun98/trends1.html> (accessed 18 May 2012). NOTE: Original article was unavailable, after 18 May 2012, at: <http://www.niaaa.nih.gov/NewsEvents/NewsReleases/economic.htm> (originally accessed on 28 March 2012).

⁶¹ Dall, 130 & 138.

⁶² Dall, 133.

revealed 10,400 cases in which active-duty personnel could not deploy with their units, due to alcohol-related reasons. These reasons can be anything from alcohol-related hospitalization to misconduct charges. This costs the DoD an extra \$510M in additional recruitment and training to meet manpower shortfalls.⁶³ Decreased readiness is another consequence of high alcohol consumption that directly affects mission accomplishment. However, there are many other immeasurable costs to consider, as many of the above figures do not include the indirect impacts on families or the economic burden resulting from decreased productivity, disability sick leave, and other increased health care costs associated with alcohol abuse.

Counseling time, fringe benefits, and the countless hours wasted when active duty members must deal with beneficiaries' alcohol-related events also significantly contribute to non-medical costs, decreased readiness, and lost productivity. It is critical to note that alcohol issues are not limited to active-duty personnel. Many times, dependents have problems with high alcohol consumption, with real but unquantifiable effects on the productivity and readiness of their active-duty family member. According to a TRICARE study of three million beneficiaries, alcohol abuse cost the DoD an estimated \$1.2 billion in 2006. This figure is a combination of \$425M in higher medical costs and \$745M in reduced readiness and misconduct charges.⁶⁴ While a significant amount, in and of itself, this figure does not include the immeasurable costs to a service member's individual productivity and the additional stresses imposed upon the military family.

In relation to direct productivity costs, AF heavy drinkers cause a 25% loss in AF productivity each year. These costs can be due to an

⁶³ Dall, 134.

⁶⁴ H.J. Harwood, et al., "Economic implications of reduced binge drinking among the military health system's TRICARE Prime plan beneficiaries," *Military Medicine* 174, no. 7 (July 2009): 728.

individual being hurt in an on-the-job accident because of drinking, not coming to work because of illness or a personal accident caused by drinking, or an individual being late to work or leaving early due to drinking.⁶⁵

The 2008 HRB found that heavy drinking rates in the military have been steady since 1980. The AF had the most pronounced increase in overall heavy drinking rates, defined as consuming five or more drinks on the same occasion at least once per week in the past 30 days, from 2005 to 2008 (10% to 14%).⁶⁶ AF binge drinking, defined as consuming five or more drinks (four or more for women) on at least one occasion during the past 30 days, was 39% in 2008, up from 34% in 2005. Although lower than the DoD binge drinking average of 47%, it is still a significant increase for the service.⁶⁷

With binge drinking rates higher than heavy drinking rates, it potentially points to the issue of a supportive military culture toward excessive alcohol use. One study found that military “binge drinking and drinking to the point of intoxication were not necessarily viewed as inappropriate or punishable [conduct],” that it was part of a cultural tradition, and that cultural norms encouraged the behavior.⁶⁸ In addition, a 2005 study on alcohol in the military concluded, “the easy availability of alcohol, ritualized drinking opportunities, and inconsistent policies contribute to a work culture that facilitates heavy and binge drinking.” The study found young adults in the military at risk for

⁶⁵ Gerald W. Talcott, Associate Professor and Director of Military Research, documents received by author, 27 March 2012.

⁶⁶ Bray, et al., *2008 Department of Defense Survey of Health Related Behaviors Among Active Duty Military Personnel*, 55.

⁶⁷ Bray, et al., *2008 Department of Defense Survey of Health Related Behaviors Among Active Duty Military Personnel*, 53.

⁶⁸ Genevieve Ames and Carol Cunradi, “Alcohol Use and Preventing Alcohol-Related Problems Among Young Adults in the Military,” *Alcohol Research and Health* 28, (2004/2005): 255.

alcohol-related problems, “making them important candidates for alcohol-related prevention programs.”⁶⁹

The AF is not immune to this cultural issue; there is a perception that the AF culture promotes excessive drinking behaviors. When asked an opinion on the statement, “Agree that others in their pay grade at their installation believe drinking to the point of losing control is acceptable,” 30% of AF respondents agreed or strongly agreed with the statement.⁷⁰ The AF percentage was higher than the other services. While only 1% higher than the Marines, the statistic is significantly higher (10%) than the Army results. It is interesting to note, however, that only 6% of AF respondents personally agreed with the statement, which is lower than the response of the other services.⁷¹ This data supports the perception that AF cultural norms promote heavy and binge drinking behaviors, possibly even more than individual choice.

What is the AF doing about alcohol abuse?

The AF has developed strategies to de-glamorize the use of alcohol by restricting alcohol specials at on-base facilities, decreasing the role of alcohol in the Air Force club system, and implementing the “Wingman” concept. These factors could be responsible for the AF heavy-drinking rate being lower than the 20% heavy-drinking rate amongst all DoD service members. The civilian drinking data for both heavy drinking and binge drinking is lower than the DoD at 14% and 16.6%, respectively. One study has suggested that young adults entering the military were

⁶⁹ Ames, “Alcohol Use and Preventing Alcohol-Related Problems Among Young Adults in the Military,” 252.

⁷⁰ Bray, et al., *2008 Department of Defense Survey of Health Related Behaviors Among Active Duty Military Personnel*, 224, & TRICARE HRB Survey Preliminary Data found at: <http://www.tricare.mil/research/downloads/Alcohol%20Preliminary%20Findings%20of%202008%20HRB%20Survey%20-%20Jul%202009.pdf>.

⁷¹ Bray, et al., *2008 Department of Defense Survey of Health Related Behaviors Among Active Duty Military Personnel*, 224, & TRICARE HRB Survey Preliminary Data found at: <http://www.tricare.mil/research/downloads/Alcohol%20Preliminary%20Findings%20of%202008%20HRB%20Survey%20-%20Jul%202009.pdf>.

more likely to have been heavy drinkers in high school.⁷² The AF rates of heavy drinking, at 14%, are lower than the DoD, and equal to the civilian data, but are still on the rise in recent years.⁷³ With respect to binge drinking, the civilian rate is close to 17%, almost 22% below the AF rate, and 30% below the DoD.⁷⁴ While the AF is doing better than the DoD, its alcohol rates for binge drinking are still significantly higher than civilian ones. The HRB authors concluded that “new and more effective initiatives will be needed to reduce heavy alcohol use.”⁷⁵

Alcohol-abuse-prevention programs are critical to decreasing associated health care costs and increasing AF readiness. Rather than focusing on treatment, prevention programs help people make good decisions when it comes to their drinking behaviors. In 2000, the DoD implemented this change in focus with a goal of decreasing the prevalence of heavy drinking within the military by 5% a year.⁷⁶ In 1998, the rate was 15%, while today it hovers around 20%. Current prevention strategies are not working.

A 2004 book by the National Institutes of Health (NIH) on various research studies on underage drinking found that “the majority of studies on price and youth drinking conclude that higher alcoholic beverage prices significantly reduce the probability, frequency, and level of drinking among youth.”⁷⁷ This same book also found a consensus

⁷² J.G. Bachman, et al., “Changing patterns of drug use among U.S. military recruits before and after enlistment,” *American Journal of Public Health* 89, (1999): 672-677.

⁷³ Bray, et al., *2008 Department of Defense Survey of Health Related Behaviors Among Active Duty Military Personnel*, 224.

⁷⁴ Bray, et al., *2008 Department of Defense Survey of Health Related Behaviors Among Active Duty Military Personnel*, 148.

⁷⁵ Bray, et al., *2008 Department of Defense Survey of Health Related Behaviors Among Active Duty Military Personnel*, 52.

⁷⁶ Staff Sergeant Kathleen T. Rehm, “Alcohol Abuse Costs DoD Dearly,” *American Forces Press Service*, 6 June 2000, <http://usmilitary.about.com/library/milinfo/milarticles/blalcohol.htm>.

⁷⁷ Institute of Medicine of the National Academies, F. Chaloupka, “The Effects of Price on Alcohol Use, Abuse, and Their Consequences,” in *Reducing Underage Drinking: A Collective Responsibility*, ed. R. Bonnie and M.E. O’Connell. (Washington DC: The National Academies Press, 2004), 541-564.

that increased alcohol pricing would lead to “significant reductions in the likelihood of drinking and driving [sic] and in the nonfatal and fatal accidents that result.” Finally, it found that increased alcoholic beverage taxes and prices would lead to significant reductions in the health consequences of alcohol use and abuse including suicide, sexually transmitted diseases, and cirrhosis of the liver.⁷⁸ One study noted that a \$0.25 increase in the beer tax would reduce workdays lost from nonfatal injuries by 4.6M, and subsequently decrease lost productivity due to alcohol by \$491M.⁷⁹ It is possible that by increasing the price of alcohol on AF bases, by either halting the sale or stopping the subsidy, the AF could significantly reduce alcohol incidents amongst personnel, decrease medical costs for treatments of all beneficiaries, and decrease the number of lost workdays associated with alcohol related behaviors.

As with tobacco, military bases subsidize alcohol purchases, incentivizing their use. DoD policies allow alcoholic beverages to be purchased at discounted prices compared to local civilian stores. A 1997 Inspector General evaluation reported a savings of 9-27% when compared to State-operated alcohol stores. This same report concluded that this pricing policy was not consistent with maintaining a healthy active-duty force and recommended a change in price structure.⁸⁰ The requested changes never took effect. Currently, at Maxwell Air Force Base, a 750mL bottle of Jack Daniels cost \$20.90 on base, while a similar bottle is \$31.88 on the economy. Additionally, a 1.75-liter bottle of Jack Daniels costs \$42.75 on base, while the same bottle is \$71.48 off-base.⁸¹ This equates to a 34-40% subsidy for alcoholic purchases, which is even higher than the cigarette subsidy. Similar to tobacco, the

⁷⁸ Institute of Medicine of the National Academies, *Reducing Underage Drinking: A Collective Responsibility*.

⁷⁹ R.L. Ohsfeldt and M.A. Morrissey, “Beer taxes, workers’ compensation and industrial injury,” *The Review of Economics and Statistics* 79, no.1 (1997): 155–160.

⁸⁰ Office of the Inspector General, *Evaluation Report on the Economic Impact of Alcohol Misuse in DoD* (Arlington, VA: DoD, Office of the Inspector General, 1997).

⁸¹ Personal cost comparison of alcohol at Maxwell AFB and in Montgomery, AL.

specific discount will vary based on the local tax-rate, but it provides a significant incentive for military members.

Despite the current alcohol subsidy that incentivizes alcohol use, the DoD and AF are implementing programs to discourage alcohol abuse. In response to the 2005 HRB that indicated that alcohol use rates had remained relatively stable since 1980, the military implemented the “That Guy” campaign throughout the DoD.⁸² The “That Guy” campaign, launched in 2007, specifically targeted the rising rate of binge drinking amongst junior personnel. Available to all military personnel, the “That Guy” interactive and creative website has facts, tools, and resources to assist members in getting information on the dangers of alcohol abuse, methods for treatment, and resources to help individuals, whether they are the one with the problem or they want to help a friend. Since it began, various AF bases have used the “That Guy” campaign to address the dangers of binge drinking. Incorporated into Wingman Day activities or commander’s calls, it has the potential to be an effective strategy to get the message out about alcohol dependency. Unfortunately, no data currently exists to reveal whether the strategy has influenced the binge drinking rates within the military.

In addition to the “That Guy” campaign, the Navy has developed a website for its own Navy Alcohol and Drug Abuse Prevention Program, as well as the PREVENT (Personal Responsibility, Values and Education Training) program. PREVENT “aims to provide 18-26 year old sailors with the education and skills necessary to encourage them to act as personally responsible, contributing members of the Navy”.⁸³ While there are no formal evaluation results, the Navy has reported, “Sailors who attended PREVENT had fewer binge drinking episodes compared

⁸² TRICARE, *DoD Survey of Health Related Behaviors Among Active Duty Military Personnel 2008 Survey Q&A*, December 2009.
<http://www.tricare.mil/2008SurveyQ&As.pdf>

⁸³ Ames, “Alcohol Use and Preventing Alcohol-Related Problems Among Young Adults in the Military,” 256.

with their pre-enlistment frequencies and showed a greater personal awareness and responsibility for their alcohol use patterns and consequences.”⁸⁴

The AF also has its own strategies for helping young Airmen reduce binge drinking. They are currently implementing an alcohol abuse prevention project in technical training at Lackland Air Force Base. In collaboration with the 37th Training Wing, they are conducting a 40-minute Brief Alcohol Intervention (BAI) for technical school trainees. In the past year, they have seen a 51% reduction in alcohol-related incidents for students in technical training. This program will potentially spread to other technical training locations, such as Keesler Air Force Base and Sheppard Air Force Base.⁸⁵ Educational interventions directly targeted at the key demographic, youth 18-24 years of age, are demonstrating a potential to reduce the rates of binge drinking and the alcohol related incidents among AF junior members, as well as helping to establish healthy behaviors for their future service in the AF.

Programs like these can educate individuals on the dangers of alcohol abuse and prevent the development of a chronic behavior pattern that can lead to alcohol-related disease and readiness issues. However, AF HPO has not addressed alcohol as a specific target area for unhealthy behaviors. According to the Chief of Health Promotion Operations, the AF Alcohol & Drug Abuse Prevention & Treatment (ADAPT) program was adequately managing and addressing the topic of alcohol. The ADAPT program promotes readiness, health, and wellness through the prevention and treatment of substance abuse, minimizes the negative consequences of drugs and alcohol, provides comprehensive education

⁸⁴ US Navy quoted in Ames, “Alcohol Use and Preventing Alcohol-Related Problems Among Young Adults in the Military,” 252.

⁸⁵ Gerald W. Talcott, Associate Professor and Director of Military Research, documents received by author, 27 March 2012.

and treatment, and returns identified abusers to unrestricted duty status or helps them transition to civilian life.⁸⁶ While the ADAPT program can successfully help alcohol abusers, these individuals need to be identified through a medical care referral, a commander's recommendation, or the self-identification process. Usually individuals enrolled in the ADAPT program have experienced a significant alcohol-related event, triggering one of the identification mechanisms. Consequently, there is a stigma associated with the ADAPT program that limits its ability to offer prevention and education for the binge drinkers or young Airmen prior to their behavior spiraling out of control. Additionally, the program does not have any alcohol prevention or cessation programs targeted at family members and retirees.



⁸⁶ Info on ADAPT program found at <http://usmilitary.about.com/cs/airforce/a/afdrugalcohol.htm>.

Chapter 2

Obesity

The United States is in the midst of an obesity epidemic. Currently, 74.1% of Americans are overweight or obese.¹ Despite high military standards, US military personnel are not immune to weight issues. Overweight and obese individuals are susceptible to medical problems such as diabetes, heart disease, and osteoarthritis; the treatment of these diseases costs the DoD \$1.4B each year.² Weight problems also affect productivity and readiness.

Measuring the body mass index (BMI) and abdominal circumference (AC) of an individual leads to predictors for increased health risks associated with body weight. BMI uses height and weight measurements to determine whether an individual is maintaining a healthy weight (BMI=18.5-24.9), is overweight (BMI>25) or is obese (BMI>30). AC measures the amount of visceral fat in the abdominal region to determine health-risk factors associated with increased abdominal fat.³ A review conducted in 1989 concluded that “fat distribution, particularly increased abdominal fat,” was an important risk factor for morbidity and mortality.⁴ The Healthy Airman Report concluded that elevated BMI and AC results predict an “increased risk for coronary heart disease, type 2 diabetes, cancer, hypertension, dyslipidemia, stroke, osteoarthritis, sleep apnea, and respiratory

¹ Lauren Streib, “World’s Fattest Countries,” *Forbes.com*, 8 February 2007. http://www.forbes.com/2007/02/07/worlds-fattest-countries-forbeslife-cx_ls_0208worldfat.html

² Military Health System Blog, “MHS to Combat Obesity in 2012 Says Woodson,” *MHS BLOG*, 10 February 2012. http://www.health.mil/blog/12-02-10/MHS_to_Combat_Obesity_in_2012_Says_Woodson.aspx

³ Air Force Medical Operations Agency, *Air Force Healthy Airman Report: 2010* (San Antonio, TX: Health Promotion Operations [AFMOA/SGHC], 2010), 11.

⁴ Bernadette M. Marriott and Judith Grumstrup-Scott, ed. *Body Composition and Physical Performance* (Washington DC: National Academy Press, 1992), 15.

problems.”⁵ These chronic conditions can lead to excessive health care costs and reduced readiness for military members.

Using BMI to determine obesity rates has some limitations. While it is the national standard and an internationally accepted means of categorizing individual weight measurements, there is some conflicting evidence regarding its utility. The main danger is that highly “muscled individuals with an accumulation of lean body mass and a BMI of 25 or higher may be classified as overweight even though their percentage of body fat is in a healthy range.”⁶ Due to this fact, various medical management teams recommend using additional factors to confirm an obesity diagnosis. Additional factors can include an AC measurement (which the AF currently uses as a metric for fitness assessments), or body fat measurements via skin fold or bioelectrical impedance.⁷ Despite the limitations of BMI measurements, with the exception of individuals in the intermediate BMI range where the measurement fails to distinguish between excess body fat and lean muscle, there is still value in using BMI as an indicator of obesity.⁸ It should be noted that while the AF still uses BMI to determine obesity, the service does use AC and BF measurements to confirm the diagnosis.

The DoD, the AF, and Obesity

Excess weight and obesity cost the DoD \$1.1B in direct health care costs and \$167M in lost productivity each year. Current statistics reveal that 62% of DoD personnel are overweight, a percentage that has been

⁵ Air Force Medical Operations Agency, *Air Force Healthy Airman Report: 2010*, 11.

⁶ Bray, et al., *2008 Department of Defense Survey of Health Related Behaviors Among Active Duty Military Personnel*, 133.

⁷ R.J. Kuczmarski and K.M. Flegal, “Criteria for definition of overweight in transition: Background and recommendations for the United States,” *American Journal of Clinical Nutrition* 72, (2000): 1074-1081.

⁸ Abel Romero-Corral, et al., “Accuracy of Body Mass Index to Diagnose Obesity in the US Adult Population,” *International Journal of Obesity (London)*, 32, no. 6 (June 2008): 959-966. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2877506/>.

increasing since 1995.⁹ The most recent data from 2010 shows 48% of active-duty AF men and 31% of active-duty AF women as being overweight (with a BMI>25).¹⁰ Obesity rates (BMI>30) hover around 14% for men and 8% for women in the AF. In the DoD, 62% of members 20 years or over are overweight, and 13% are obese. The latest AF Fitness testing results also revealed that 9% of men and 4% of women in the AF do not meet the AF AC standards (39-inch waist measurement for men, 35.5-inch waist measurement for women).¹¹ Among the military services, only the Navy is worse than the AF with weight issues; 17% of sailors are obese and 62% are overweight.¹²

Excess weight can lead to a multitude of chronic and preventable diseases that directly create high draws on the health care system. One example of a primary disease for which weight is a contributing factor is diabetes.¹³ Obese service members are three times more likely to have diabetes than those within normal weight standards. In addition, junior and senior enlisted service members in all branches are 3 to 4 times more likely to experience a type 2 diabetes diagnosis when compared to officers.¹⁴ In 2007, TRICARE spent approximately \$125M on beneficiaries diagnosed with diabetes, equating to an additional annual cost averaging \$1,684 per diabetic individual. Diabetes is just one example of a preventable chronic disease that can stem from obesity and increases costs for the DoD. Gallbladder disease (\$171M at \$6,491 per individual), hypertension (\$156M at \$941 per individual), and

⁹ Bray, et al., 2008 *Department of Defense Survey of Health Related Behaviors Among Active Duty Military Personnel*, ES-11.

¹⁰ Air Force Medical Operations Agency, *Air Force Healthy Airman Report: 2010*, 11.

¹¹ Air Force Medical Operations Agency, *Air Force Healthy Airman Report: 2010*, 11-12.

¹² Michael Hoffman, "55 percent of Airmen overweight," *Air Force Times*, 28 April 2008, http://www.airforcetimes.com/news/2008/04/airforce_fat_AF_042808w/

¹³ Diabetes is not the only chronic disease where obesity is a causal factor, but is being used as an example to link direct medical care costs to unhealthy habits. Hypertension, joint conditions, or cardiovascular disease could also be used to emphasize the point.

¹⁴ Robert Paris, et al., "Weighing in on Type 2 Diabetes in the Military: Characteristics of U.S. military personnel at entry who develop type 2 diabetes," *Diabetes Care* 24, no.11 (November 2001), 1894-1898.

cardiovascular disease (\$149M at \$4,399 per individual) are other obesity-related high draws on the medical system.¹⁵

Increased health-care costs can decrease with the proper preventive measures. A study done in Japan looked at the influences of lifestyle on health and disease, focusing on four major habits of smoking, drinking, exercise, and diet. After analyzing serum lipids (cholesterol, LDL, HDL, triglycerides) the authors found that “correction of lifestyle as a non-drug therapy may clearly improve hyperlipidemias or hypo-HDL-cholesterolemia so this approach should be aggressively employed as part of the prevention and treatment for hyperlipidemias.”¹⁶

Hyperlipidemia is excess of fatty substances in the blood.

Hyperlipidemias include diabetes, high cholesterol, or high triglycerides and are modifiable risk factors for coronary heart disease.¹⁷ This evidence suggests that changes in individual nutritional behaviors, physical activity levels, and abusive habits can decrease chronic disease, thus decreasing the associated costs to health care and daily productivity.

Similar to this study, the military can realize comparable benefits by instituting wellness programs targeting unhealthy behaviors and conditions, such as obesity. A 2010 TRICARE analysis concluded that lifetime medical expenditures declined \$440 for each 1% reduction in body weight. This figure includes a \$590 savings from the improved health condition offset by an extra \$150 in additional expenditures due

¹⁵ Timothy M. Dall, et al., “Cost Associated with Being Overweight and with Obesity, High Alcohol Consumption, and Tobacco Use within the Military Health System’s TRICARE Prime-Enrolled Population,” *American Journal of Health Promotion* 22, no. 2 (Nov-Dec 2007): 135.

¹⁶ Yoshiya Hata and Kumiko Nakajima, “Life-style and Serum Lipids and Lipoproteins,” *Journal of Atherosclerosis and Thrombosis* 7, no. 4 (2000): 177.

¹⁷ Definition of Hyperlipidemia found at: <http://www.healthcentral.com/encyclopedia/408/366.html> (accessed on 10 May 2012).

to increased longevity.¹⁸ In addition, various disease management programs have demonstrated the potential to cut medical costs, while also improving patient health and quality of life. A 2010 TRICARE study analyzing disease management programs found modest improvements in patient outcomes, including reduced inpatient days and increased percentages of patients receiving the appropriate medications and tests. These outcomes equated to annual per-patient reductions in medical costs of \$453 for asthma, \$371 for congestive heart failure, and \$783 for diabetes. The estimated return on investment totaled \$1.26 per every \$1.00 spent on preventive programs.¹⁹ A small investment made by the AF in helping beneficiaries prevent chronic disease can result in large costs savings, while also improving the quality of life for the individuals and their families.

In addition to the direct health care costs, obese service members contribute to lost productivity. Service members have lower levels of productivity when they are overweight or obese, especially when they suffer from various medical conditions, such as joint pain, high blood pressure, and diabetes. The 2005 HRB found that “overweight and obese active-duty personnel report more days with below-normal productivity compared with their colleagues who are not overweight.”²⁰ This resulted in 658,000 lost workdays each year, costing the DoD \$103M annually. In addition, approximately 1200 initial enlistees separate from the service each year because of a failure to meet weight standards, costing

¹⁸ Timothy M. Dall, et al., “Weight loss and lifetime medical expenditures: a case study with TRICARE Prime beneficiaries,” *American Journal of Preventive Medicine* 40, no. 3 (March 2011): 338-344.

¹⁹ Timothy M. Dall, et al., “Outcomes and Lessons Learned From Evaluating TRICARE’s Disease Management Programs,” *The American Journal of Managed Care* 16, no. 6 (June 2010): 438-446. http://www.ajmc.com/publications/issue/2010/2010-06-vol16-n06/AJMC_10jun_Dall_438to446.

²⁰ Dall, “Cost Associated With Being Overweight and With Obesity, High Alcohol Consumption, and Tobacco Use Within the Military Health System’s TRICARE Prime-Enrolled Population,” 130.

the DoD \$61M.²¹ Obese individuals tend to show up for work sick or simply under-perform at work, according to an article published in 2010 in the *Journal of Occupational and Environmental Medicine*. The study also found that with a categorical increase in BMI, going from overweight to obese, lost productivity doubled.²²

According to the 2010 HAR, “Airmen with healthy weight are protected from the physical and economic consequences of overweight/obesity and have increased readiness.”²³ Service members who are at a healthy weight are ready to accomplish the mission. Unfortunately, DoD-wide, obesity is the leading disqualifier for entry into military service. Doctor Jonathon Woodson, Assistant Secretary of Defense for Health Affairs, noted that 27% of American 17-24 year olds do not qualify for military service because of their weight.²⁴ Obesity is directly affecting military readiness. In addition, the overweight rate amongst new recruits has risen to 35% in 2008. While lower than 2005 data (46%) it is still higher than the 1995 statistic of 28%.²⁵

Recent research has revealed that childhood obesity rates have tripled for 6- to 11-year-olds, and 17% of US children—12.5 million youths 2-19 years old—are obese.²⁶ Research done by the American Heart Association has also found that the arteries of obese children contain excessive fatty build-up, similar to an adult three decades older. Carotid artery intima-media thickness (CIMT), is a test that can quickly screen for and monitor atherosclerosis; a high level of thickness means

²¹ Dall, “Cost Associated With Being Overweight and With Obesity, High Alcohol Consumption, and Tobacco Use Within the Military Health System’s TRICARE Prime-Enrolled Population,” 130.

²² Eric A. Finkelstein, et al., “The Costs of Obesity in the Workplace,” *Journal of Occupational & Environmental Medicine* 52, no.10 (October 2010): 971-976.

²³ Air Force Medical Operations Agency, *Air Force Healthy Airman Report: 2010*, 11.

²⁴ Military Health System Blog, “MHS to Combat Obesity in 2012 Says Woodson.”

²⁵ Bray, et al., *2008 Department of Defense Survey of Health Related Behaviors Among Active Duty Military Personnel*, 135.

²⁶ Centers for Disease Control and Prevention, “Obesity rates among all children in the United States,” Centers for Disease Control, <http://www.cdc.gov/obesity/childhood/data.html>

high risk of heart disease.²⁷ These children's arteries are already showing signs of excess thickness, predicting the early development of cardiovascular diseases. Up to two-thirds of obese children become obese adults, who make excessive draws upon the health care system.

Military children are not immune to the obesity epidemic. In 1992, researchers found that 14.8% of military children were overweight, 10.8% were obese, and 7.7% were grossly obese. They also found that over the term of the 12-year study, obesity rates in military children doubled.²⁸ The numbers have not improved since then. The 2005 HRB revealed, "approximately two out of three non-active duty beneficiaries [sic] are overweight; one out of three is obese, and 18.9% of DoD dependent adolescents are obese."²⁹

Another contributing factor could be the improper diagnosis of childhood obesity and lack of early intervention. Doctor Sandy Kimmer, US Navy, studied the diagnosis rates of obesity in military children in 2007. Doctor Kimmer concluded that only half of children seen at military medical facilities had an accurate height and weight recorded, and of the obese children, only 6.9% of those meeting the clinical criteria for obesity ever received a formal diagnosis. She hypothesized that the high turnover rate of military doctors and the military population could contribute to a misdiagnosis. In addition, a 2003 study discovered that the most widespread barrier to diagnosing obesity in children is a fear of negatively affecting a child's self-esteem. This reluctance by doctors can stem from the unfamiliarity in a child/pediatrician relationship within

²⁷ Charlene Laino, "Obese Kids Have Middle-Aged Arteries," *WebMD Health News*, 11 November 2008, <http://www.webmd.com/heart-disease/news/20081111/obese-kids-have-middle-aged-arteries>.

²⁸ Sandy Kimmer, Power Point Presentation, "Are we recognizing pediatric obesity?" Naval Hospital Camp Pendleton, CA, ND. www.usafp.org/.../Kimmer%20-%20Pediatric_Obesity.ppt

²⁹ TRICARE Press Release, "DoD Pledges to Combat Childhood Obesity," *Military News*, 16 September 2008, <http://www.military.com/news/article/dod-pledges-to-combat-childhood-obesity.html>

military communities caused by high turnover rates.³⁰ Regardless of the reason, failing to properly diagnosis childhood obesity and provide early intervention and guidance, such as nutrition and counseling, along with certain social factors within American society, are contributing to obesity issues among military children.

Obese military children are but one segment of an overweight and obese population of military beneficiaries. A 2003 study analyzed the potential for obesity and weight-related preventable diseases within a population of military retirees and their dependents. The study found that 80% of men and 60% of women were overweight, and 33% of men and 29% of women were obese. It also found that the higher the weight, the higher the potential for disease. The study concluded that 20-plus years of active-duty military service did not equate to any long-term protection against individuals being overweight or obese, or suffering from weight-related diseases. It recommended the implementation of prevention plans to reduce weight-related health care costs.³¹ Since 2003, have new and improved prevention plans lowered obesity rates?

Overall, military obesity rates have significantly increased since 1995, from 5.1% to 13.2% across the services. The same BMI measurement used in 1995 was used in the most recent survey in 2008; therefore, the standard of comparison is consistent. As discussed previously, BMI has some limitations, but it is still a valid indicator for obesity especially when confirmed with other discriminators. The increased DoD obesity rates over the years can be attributed to either an actual increase in obesity throughout the ranks, or an increase in lean-muscle mass of military members. The 2008 HRB found that 15% of males and 20% of females in all military services reported that they had

³⁰ E. Jelalian, et al., "Survey of physician attitudes and practices related to pediatric obesity," *Clinical Pediatrics* 42, no. 3 (2003): 235-245.

³¹ A.M. Kress, M.C. Hartzel, and M.R. Peterson, "Burden of disease associated with overweight and obesity among U.S. military retirees and their dependents, aged 38-64, 2003." *Preventive Medicine* 41, no. 1 (July 2005): 63-69.

difficulty meeting their service weight and/or body fat standard.³² In addition, the Marine Corps obesity rates have remained relatively low at 6.1% throughout this same period, and any increase in the military population's lean muscle mass would have reasonably transferred to the Marine Corps as well. This makes it unlikely that the increase in obesity rates being due only to lean muscle mass. Obesity rates in the US population and in the military have been on the rise since 1995. Either current prevention measures to ensure the sustainment of healthy weight habits for the active-duty, family-member, and retiree populations are not working, or else the method of measurement and obesity statistic reporting needs to be re-evaluated.

What is the AF doing about Obesity?

Obesity has a direct relationship with physical activity and nutritional fitness, as will be discussed in the next two chapters; therefore, any comprehensive strategy hoping to effect body weight should include diet and exercise. A study done by Health Management Associates found that obesity costs the state of California \$21.7B per year in indirect and direct medical costs, and \$11.2B in productivity loss. The study found that a 5% improvement in physical activity with a corresponding healthy weight resulted in a \$6B savings over 5 years. A 10% improvement produced \$13B in savings. If just one or two out of every 20 people changed their lifestyle by increasing physical activity and adopting healthy eating habits, a significant savings in productivity would occur.³³ This demonstrates the potential for military health strategies that use assistance with exercise and diet to decrease obesity rates, and ultimately create health-care savings.

³² Bray, et al., *2008 Department of Defense Survey of Health Related Behaviors Among Active Duty Military Personnel*, 141.

³³ California Department of Health Services, *The Economic Costs of Physical Inactivity, Obesity, and Overweight in California Adults: Health Care, Worker's Compensation, and Lost Productivity* (Sacramento, CA: April 2005).

<http://www.cdph.ca.gov/HealthInfo/healthyliving/nutrition/Documents/CostofObesityToplineReport.pdf>

AF and DoD strategies that target the lifestyle of the active-duty military member are extremely important, but it is also critical to incorporate prevention and education opportunities for retirees and dependents. These two groups have relatively high obesity rates and are thus significant contributors to the costs of obesity-related disease. In 2003, Georgetown University's Center on an Aging Society published a study called "Obesity Among Older Americans." They concluded that among the obese population aged 51 and older, a disproportionate share, almost 75%, are age 51 to 69.³⁴ Similar to the civilian population, a Health Care Survey of DoD beneficiaries, taken from 2007-2009, revealed an average obesity rate of 21.4% for active-duty dependents and 31.9% for retirees and their dependents.³⁵ With 1.1M Tricare Prime beneficiaries overweight and 896K obese (approximately 47% of the 4.3M beneficiaries under age 65 enrolled in Tricare Prime in 2006; Tricare Prime is required for active duty, and open to dependents and retirees under 65), prevention programs must include interventions at the military family level.³⁶ With childhood obesity on the rise, especially amongst the children of retirees and non-commissioned officers (NCO), there is an increased risk of children experiencing health problems previously found only in the adult population, like various heart conditions and type 2 diabetes.³⁷

Various national programs exist to promote healthy weight behaviors among America's youth and the retiree population. The

³⁴ Georgetown University, "Obesity Among Older Americans," *Center on an Aging Society*, no.10 (July 2003), <http://ihcrp.georgetown.edu/agingsociety/pdfs/obesity2.pdf>

³⁵ Eric B. Schoomaker, Lt Gen, Powerpoint Presentation, "A Health System or a System for Health: Army Medicine at the Crossroads," USPHS Commissioned Officers Foundation Scientific Meeting, 4 June 2009, <http://www.phscof.org/events/sym09/Thursday/Marquis%20B/Schoomaker.pdf>

³⁶ Dall, "Cost Associated With Being Overweight and With Obesity, High Alcohol Consumption, and Tobacco Use Within the Military Health System's TRICARE Prime-Enrolled Population," 130.

³⁷ Grantmakers in Health, "Healthy Behaviors: Addressing Chronic Disease at Its Roots," *Based on a Grantmakers in Health Issue Dialogue*, Issue Brief 19, (February 2004), 8.

“Mission: Readiness” program is a non-profit started by retired admirals, generals, and other senior military leaders “who work to ensure continued American security and prosperity by calling for smart investments in the upcoming generation of American children.” With 75% of individuals age 17-24 unable to serve in the military due to obesity, lack of an education, or criminal records, the organization aims to set young people on a healthy and successful life path.³⁸ First Lady Michelle Obama instituted the “Let’s Move” campaign to solve “the challenge of childhood obesity within a generation, so that children born today will grow up healthier and able to pursue their dreams.” The organization focuses on giving children and parents the tools and resources for healthier lifestyle choices in the prevention of obesity.³⁹ Prevention and education strategies that target more than the active-duty member are necessary to see obesity rates decrease within the DoD as a whole today, and into the future.

For retirees, the Department of Veterans Affairs began the MOVE! Weight Management Program for Veterans. According to their official website, the program helps veterans lose weight, keep it off, and improve their health.⁴⁰ All veteran’s facilities have been mandated to initiate the MOVE! program and it is free to all veterans, and their family members who are receiving care through the Veteran’s Administration (VA). Individuals desiring help with health issues fill out a questionnaire to determine their risk factors. They are then given recommended handouts and a list of providers that can help them develop preventative health plans. An independent study concluded that screening for obesity and weight-management treatment increased from 66% to 95% over a 3-year

³⁸ Information on the Mission Readiness Program obtained from: <http://www.missionreadiness.org/> (accessed on 28 March 2012).

³⁹ Let’s Move, “Learn the Facts,” Let’s Move Website, <http://www.letsmove.gov/learn-facts/epidemic-childhood-obesity>.

⁴⁰ Department of Veterans Affairs, *MOVE!* (Washington DC: National Center for Health Promotion & Disease Prevention), <http://www.move.va.gov/default.asp> (accessed 8 May 2012).

period due to the MOVE! program. However, it also found the while the percentage of eligible patients participating in weight management visits had doubled during implementation, the rate has stabilized at 10-12%.⁴¹ While the website is easy to use and the program has seen successful results, it does require individual motivation, as well as provider support, in order to reach its full potential.

AF HPO aim to decrease the prevalence of overweight and obese individuals, increase healthy weight management practices, and increase healthy weight and body composition awareness.⁴² However, the AF has limited data and very few programs that specifically target this specific issue. Currently, AF HPO is in the process of building standardized interventions to target the AF obesity issue. They are also trying to develop a method to evaluate weight management practices and body composition awareness. In the near future, there should be consistent programs across the AF and a means for tracking HAWC interventions pertaining to obesity: classes like Healthy Heart, Healthy Living and the Body Composition Improvement program.⁴³

Some commanders are taking their own initiatives with wellness programs and policy requirements to halt the obesity epidemic within their units. In December of 2007, the AFMC vice commander directed all AFMC base commanders to cut their units' obesity rates by 10% in the first half of 2008 and reduce the rate by another 10% by the year's end.⁴⁴ Unfortunately, the command did not track the results of this effort to determine whether the policy influenced unit obesity rates. This information could provide critical data for determining the efficacy of

⁴¹ Leila C. Kahwati, et al., "RE-AIM evaluation of the Veterans Health Administration's MOVE! Weight Management Program," *Translational Behavioral Medicine* 1, no. 4 (2011): 551-560.

⁴² Air Force Medical Operations Agency, *Air Force Healthy Airman Report: 2010*, 4.

⁴³ MSgt Chandra Gomez (Maxwell AFB HAWC), and Lt Col Tricia Vorachek (AFMOA/AF Health Promotion Operations), in discussion with the author 5 April 2012.

⁴⁴ Holly Birchfield, "AFMC aims to reduce obesity risk, decrease average BMI," *AF Print News Today*, 18 April 2008, http://www.robins.af.mil/news/story_print.asp?id=123095019.

strict policy changes and higher headquarters directives, and provides another area AF HPO should include in its future unit tracking system.



Chapter 3

Physical Activity

Physical activity improves heart efficiency, circulation, and body composition, and it lowers blood pressure and blood fats.¹ Physically fit individuals have a reduced risk for heart disease, heart attack, and stroke, and increased well-being and performance levels. They also tend to maintain a healthy weight and decrease their risk for developing obesity. Regular physical fitness leads to stronger bones, greater flexibility, stress management, better sleep, and increased energy. According to the Healthy Airman Report, when Airmen are physically fit, they are ready to meet mission demands and tend to perform at higher levels.²

Conversely, physical inactivity shortens life, limits functional independence, and decreases an individual's quality of life, due to the development of chronic disease. Cardiovascular disease, obesity, diabetes, osteoporosis, and various cancers are potential consequences of physical inactivity.³ The care for these types of preventable disease drives health care costs up. Every year, the United States spends \$75B in direct health care costs for afflictions that result from physical inactivity.⁴ Employers bear the majority of this cost burden. In response, many of them are investing in wellness programs that offer opportunities for physical activity, as well as help in changing unhealthy

¹ Air Force Medical Operations Agency, *Air Force Healthy Airman Report: 2010* (San Antonio, TX: Health Promotion Operations [AFMOA/SGHC], 2010), 17.

² Air Force Medical Operations Agency, *Air Force Healthy Airman Report: 2010*, 17.

³ Glenna DeJong, et al., "The Economic Cost of Physical Inactivity in Michigan," *Governor's Council: Physical Fitness, Health, and Sports*, 2003, <http://www.michiganfitness.org/active/documents/CostofInactivity.pdf>

⁴ Centers for Disease Control and Prevention, "Facts About Obesity in the United States," *Centers for Disease Control*, ND, http://www.cdc.gov/PDF/Facts_About_Obesity_in_the_United_States.pdf (accessed 18 May 2012).

lifestyle behaviors, thus improving employee health and decreasing health care costs.

Wellness is good for business, and it is good for military organizations as well. A company investment of \$100-150 per employee each year to participate in an employee wellness program can save \$300-450 per employee per year.⁵ A survey published in the Art of Health Promotion newsletter, from *The American Journal of Health Promotion*, found that companies that implemented employee health and wellness programs realized a 30% reduction in medical and absenteeism costs in less than 4 years.⁶ Additionally, a study that analyzed various workplace health and wellness programs found on average that medical costs fell by \$3.27 for every dollar spent, and productivity costs fell by \$2.73 for every dollar spent. More than 60% of the programs focused on fitness, and 75% targeted more than one risk factor, including obesity, smoking, alcohol, nutrition, and stress management.⁷ Comprehensive health and wellness programs can target multiple unhealthy behaviors, and they have demonstrated high levels of return for various organizations in the private sector.

The DoD, the AF, and Physical Activity

Today, 50% of American adults do not get the recommended amount of daily exercise, and 25% are completely sedentary. In contrast, physical fitness is more prevalent in US military culture, with 62% of military members engaging in vigorous physical activity, compared to only 23% of the civilian adult population. The military appears to be

⁵ Ron Goetzel (Director, Cornell University Institute For Health and Productivity Studies), interview by the Wellness Council of America President David Hunnicutt, 2004.

⁶ Lisa Nichols, "Workplace Wellness Programs," Art of Health Promotion Newsletter Survey results, from *American Journal of Health Promotion*, 2005. <http://lisa-nichols.suite101.com/workplace-wellness-programs-a27042>

⁷ Katherine Baicker, David Cutler, and Zirui Song, "Workplace Wellness Programs Can Generate Savings," *Health Affairs*, (February 2010): 304-312.

doing well in terms of physical activity, most likely because of regular fitness testing requirements, commander-directed physical training sessions, and installation fitness facilities.

The 2008 HRB found improvements in the percentage of service members engaging in 20 minutes or more of vigorous exercise at least three times per week, up 6 points from 58% in 2005 to 64% in 2008. In addition, combined moderate or vigorous physical activity increased from 77% in 2005 to 83% in 2008.⁸ The latest AF statistics (2010) reveal that 80% of Airmen are doing “enough physical activity and strength training to meet Centers for Disease Control (CDC) and Prevention guidelines.”⁹ Together with the change in Fitness Standards centralized under the Fitness Assessment Centers (FAC) at each Air Force Base, it appears that AF policies have succeeded in getting Airmen to do above-average amounts of physical exercise.

AF rates of physical activity exceed those in the civilian sector. Approximately 88% of Airmen exercise two or more days per week, 83% exercise three or more days per week, and 26% exercise five or more days per week.¹⁰ Current fitness assessment (FA) data is from early 2010, before the full implementation of the new FA process began in July 2010. It reveals that 25% scored an excellent, 65% scored a good, and 3% failed (this also includes a 4% exempt rate and 3% who were never tested).¹¹ While a 3% failure rate seems manageable, it means that 10,799 individuals failed to meet the minimum fitness standards for AF military service.

The AF members who have failed the FA cite certain barriers to physical activity. These include a lack of unit physical training time or

⁸ Robert Bray, et al., *2008 Department of Defense Survey of Health Related Behaviors Among Active Duty Military Personnel*, RTI/10940-FR (Research Triangle Park, NC: Research Triangle Institute, September 2009), ES-12.

⁹ Air Force Medical Operations Agency, *Air Force Healthy Airman Report: 2010*, 4.

¹⁰ Air Force Medical Operations Agency, *Air Force Healthy Airman Report: 2010*, 17.

¹¹ Air Force Medical Operations Agency, *Air Force Healthy Airman Report: 2010*, 19.

unique duty hours given to shift workers.¹² According to the current fitness regulation, AFI 36-2905, commanders are encouraged to have unit physical training (PT) programs, and to allow members to participate in exercise during duty hours. There is, however, no requirement for mandatory PT time, and physical activity is primarily an individual responsibility. As the regulation states, “It is every Airman’s responsibility to maintain the standards set forth in this AFI 365 days a year.”¹³ The main question is whether individual responsibility is enough to keep Airmen physically fit for duty and at a healthy weight. With over 10,000 Airmen failing the FA, current policies may not be enough.

AF fitness testing has undergone significant changes over the last twenty years. Originally, the AF used a 1.5-mile run, until multiple injuries led to the AF adopting the cycle ergometry test in the 1990’s. This test was seen as offering a more precise and high-tech way to measure aerobic performance during submaximal exercise. Operations Enduring Freedom and Iraqi Freedom placed large numbers of Airmen in remote regions of the world in the early 2000s. Along with the growing demands of the AF warrior culture and high operations tempo, AF leaders changed the fitness program in January 2004 back to the basics of running, sit-ups, and pushups, as well as an abdominal circumference measurement.¹⁴ Left in place, however, was the requirement that unit commanders allot “time to exercise during duty hours...[ensuring] all members are permitted up to 90 minutes of duty time for physical training three to five times weekly.”¹⁵

¹² Air Force Medical Operations Agency, *Air Force Healthy Airman Report: 2010*, 19.

¹³ Air Force Instruction 36-2905. *Personnel Fitness Program*, 1 July 2010, 6.

¹⁴ Rod Powers, “Air Force to Eliminate Cycle Ergometry Test in 2004,” *About.com Guide*, 27 October 2003, <http://usmilitary.about.com/cs/airforce/a/newaffitness.htm>.

¹⁵ Air Force Instruction 10-248. *Operations Fitness Program*, 24 May 2005 (Rescinded), 9.

A 2008 audit of the AF fitness program revealed that AF units did not engender a year-round “culture of fitness.” Commanders were not consistent in their punishment for FA failures, nor were they properly implementing the testing procedures.¹⁶ AF leadership implemented new testing procedures effective 1 July 2010.¹⁷ These orders called for a “culture of fitness” throughout the AF, with members testing twice per year unless receiving an excellent score. This change required the reporting of fitness metrics up the chain of command, and placed fitness scores on performance reports. It also required commanders to have a written policy for their unit fitness programs. Even with these changes, however, the regulation continued to present fitness as an individual responsibility. Subsequently, this new AFI also removed the mandatory physical training time allotted during duty hours, changing it to read, “unit PT programs will *encourage* members to participate in physical fitness training up to 90 minutes, 3-5 times per week” (emphasis added).¹⁸

According to AF officials, the elimination of mandatory PT was intended to give commanders more freedom in conducting PT programs specific to individual unit needs. In addition, this change also fell in line with the AF focus on fitness as an individual responsibility.¹⁹ However, it is important to note that only the AF and Navy do not mandate PT for military members. It is probably no coincidence that the AF and Navy have the highest obesity, as well as the lowest physical activity rates in the DoD.

¹⁶ RAF Mildenhall Health and Wellness Center, “Questions about the new PT program answered,” *RAF Mildenhall.mil website*, 3 September 2009, <http://www.mildenhall.af.mil/news/story.asp?id=123166173>.

¹⁷ Air Force Instruction 36-2905. *Personnel Fitness Program*, 1 July 2010.

¹⁸ Air Force Instruction 36-2905. *Personnel Fitness Program*, 1 July 2010, 14.

¹⁹ Stars and Stripes, “AF May Take Out Mandatory PT,” *Military.com*, 5 November, 2009, <http://www.military.com/military-fitness/air-force-fitness/af-may-take-out-mandatory-pt>.

With obesity and physical activity rates only slightly worse than the AF, the Navy has a similar view on physical activity. The Navy acknowledges PT as an individual responsibility. While the Navy does perform fitness testing, it does not mandate unit PT sessions. It recommends that commanders give sailors at least three 60-minute PT sessions during duty hours each week, which is very similar to the AF regulation as stated above, except that the AF encourages 90-minute sessions.²⁰

In the Marine Corps, commanding officers are “responsible for the combat readiness of their organization” and they are required to “ensure Marines perform at least five combat conditioning sessions, of 30 minutes duration, per week.”²¹ Instead of placing the responsibility on the individual member, the Marine Corps requires its commanders to keep their units fit and ready to perform the mission. This results in a less than 2% fail rate for the service on physical fitness tests (less than 3,500 individual failures each year), the lowest obesity rate within the DoD at 6.1%, with almost 90% of Marines engaging in physical activity five times per week.²² One of the main reasons the Marine Corps is so successful with its PT program is because of the culture of fitness within the service, as well as commanders who enforce the regulation and the standards. No matter the specific career field, every Marine is expected to be physically fit and able to accomplish the mission.²³

Similarly, in the US Army, the “responsibility for physical training is the commander’s,” according to FM 21-20.²⁴ AR 350-1 states, “commanders...will establish physical fitness training programs,” and “training sessions will be conducted a minimum of three times per

²⁰ Stars and Stripes, “AF May Take Out Mandatory PT.”

²¹ Marine Corps Order (MCO) 6100.13, *Marine Corps Physical Fitness Program*, 1 August 2008, 1-2.

²² Brian McGuire, USMC Health Office, email to the author, 30 March 2012.

²³ Major Steve Kahn, interview by the author, 30 March 2012.

²⁴ Army Field Manual (FM) 21-20, *Physical Fitness Training*, 1 October 1998, 1-3.

week.”²⁵ While not as regulated in physical activity as the Marine Corps, the US Army puts the responsibility on the commander to maintain unit combat readiness. However, despite having significantly higher percentages of individuals that perform physical activity each week (81.5% exercise more than 30 minutes at least 3 times per week) when compared to the AF, the US Army’s rates of obesity are statistically similar. This discrepancy points to a possible lack of enforcement of the US Army regulation for PT. Various US Army officers and commanders have admitted that they were unaware of the mandatory nature of Army PT, or that they do not comply with the regulation requirements. They stated that PT was an individual responsibility within their units. This attitude seemed to be more prevalent in non-combat Army units as opposed to the front-line war-fighters.²⁶

With the most regulated physical activity program of all the services, the Marine Corps has the lowest obesity rates, lowest fitness test failures, and highest physical activity percentages within the DoD. While physical activity rates of the other services are still well above their civilian counterparts, the Marine Corps strategy truly embodies a “culture of fitness” through mandated and enforced commander-directed fitness programs requiring physical activity at least three days per week.

Regardless of whether PT is a commander or an individual responsibility, there is a cost issue concerning physical activity within the AF. Increased fitness testing intervals and stricter regulations for monitoring the progress of the AF fitness program raise the cost of the fitness programs. In January of 2012, an AF Guidance Memorandum once again made some changes to AFI 36-2905. The major changes, dictated by the memorandum, updated the structure of the FAC following the elimination of civilian positions, and eliminated the requirement for

²⁵ Army Regulation (AR) 350-1, *Army Training*, 4 August 2011, 10-11 and 152.

²⁶ Interview with four different US Army officers, 30 March 2012. (unattributed interview).

unit fitness programs.²⁷ AF leadership determined that using outside observers to ensure continuity and enforcement of PT testing procedures was not worth the high cost of having civilians administer the test. In this day of fiscal restraints, it is prudent to develop low-cost strategies for changing the fitness culture and ensuring Airmen are physically fit.

What is the AF doing about Physical Activity?

AF HPO objectives for physical activity include increasing physical fitness for Airmen, increasing safe and effective physical activity, decreasing fitness-related injuries, and increasing supportive environments for physical activity.²⁸ They are also focusing on ensuring the safety and effectiveness of reported physical activities. At this time, only Airmen who fail their FA test receive additional training and education on safe and effective exercise practices through the AF BE WELL program. While the program itself provides this important training, as well as information and resources for healthy eating, only a small percentage of Airmen participate. In a positive step, AF HPO is looking at ways to promote the BE WELL program to make it available to every Airman.²⁹ However, similar to the ADAPT program, while well intentioned, there is a stigma attached to these types of interventions that unfortunately shadows the benefits.

AF HPO has acknowledged that a supportive environment and a culture of fitness are critical to the effectiveness of physical activity. However, no current data exists to analyze the environments of the various AF units. One survey showed that “71% of personnel think the AF supports year-round, routine participation in physical activity a fair amount to a great deal.”³⁰ While it sounds like a supportive statistic, the data does not define “a fair amount” or “a great deal.”

²⁷ Air Force Guidance Memorandum for AFI 36-2905, 1 July 2010.

²⁸ Air Force Medical Operations Agency, *Air Force Healthy Airman Report: 2010*, 4.

²⁹ Air Force Medical Operations Agency, *Air Force Healthy Airman Report: 2010*, 4.

³⁰ Air Force Medical Operations Agency, *Air Force Healthy Airman Report: 2010*, 21.

As the central authority for the AF HAWCs, AF HPO has admitted that they should track the progress of the programs offered by each HAWC, enforce the continuity of programs, and facilitate the sharing of benchmark programs and policies across the service. Unfortunately, the tracking systems are limited and are dependent on the reporting of the various HAWCs. In addition, AF HPO put in a request for an internet-based solution to start officially tracking various outcomes for programs at the AF, MAJCOM, and unit levels but did not receive the support.³¹

With respect to physical activity, AF HPO has received some information on environmental changes including two HAWCs that developed or improved walking or running trails, and two HAWCs that introduced bike-share programs on their base. Maxwell Air Force Base has also implemented a health and wellness program called Healthy Body Healthy Life (HBHL). The program focuses on military spouses and families, but is also open to retirees and military members. It is a free program offering fitness classes, on-line workouts, fitness and nutrition education, and healthy cooking tips. HBHL educates individuals on nutrition and fitness topics, helps them make small lifestyle changes within their families, all while building military communities of individuals who are focused on living healthy lives. The program is independently run by military spouses, without any HAWC support, and is expanding to eight different locations in the summer of 2012. Ideally, the founders hope HBHL will be implemented at every military base worldwide, offering a networked infrastructure for military families that perseveres despite the instability associated with frequent moves. With a community construct in place, positive behaviors are monitored and reinforced. However, without a tracking system or a reliable communication network to facilitate the sharing of installation

³¹ Lt Col Tricia Vorachek, Director of AF Health Promotion Operations, to the author, email, 17 April 2012.

benchmark programs, each HAWC is running virtually independently without any AF-level cohesion or continuity.³²

The AF does a good job of incentivizing positive behaviors with respect to physical activity. AF-wide exercise incentives offer members extra motivation for scoring well on the AF fitness assessment. Once the AF determined that every member would take the AF FA twice per year, the regulation allowed an incentive for those individuals scoring in the excellent category. By scoring above a 90 on the fitness test, members had to take the FA only once per year.

It is extremely important to ensure that AF members, families, and retirees are physically fit. Physical activity is one counter to obesity and its associated costs. To maintain a healthy weight, the daily energy and calories expended must be equal to or greater than the daily calories consumed by an individual. Balancing calories is essential. If individuals are exercising enough to ensure positive calorie expenditures, but obesity rates are still increasing, it is worthwhile to analyze whether the calorie intake is provoking the imbalance.

³² Healthy Body Healthy Life, "About Healthy Body Healthy Life," <http://www.healthybodyhealthylife.org>, (accessed 8 May 2012).

Chapter 4

Nutritional Fitness

The second cause of the obesity epidemic in America is diet. According to the “2010 Dietary Guidelines for Americans,” poor diet and physical inactivity are the most important factors contributing to the US obesity epidemic. Only 10% of Americans eat a healthy diet—the current, typical American diet is too high in saturated fat, salt, and refined sugars and too low in fruits, vegetables, whole grains, calcium, and fiber.¹ Intake in excess of the daily requirements, as well as the intake of the wrong types of calories, can result in weight gain, and/or cause various chronic health disorders including heart disease, diabetes, hypertension, and osteoporosis.² A healthy dietary ratio is 50-60% complex carbohydrates, 25-35% protein, and 20-25% fat. The average female should consume approximately 1600-2000 calories per day, while the average male should ingest 2000-3000 calories.³ Most Americans and most Airman consume far more.

The DoD, the AF, and Nutritional Fitness

The last chapter discussed the AF’s success in promoting physical activity as one response to the obesity epidemic. With 90% of AF members passing their physical fitness test, “the high prevalence of overweight in the military may be due more to issues regarding diet than issues regarding lack of exercise.”⁴ Some AF members may be participating in enough physical activity to increase their caloric

¹ Grantmakers in Health, “Healthy Behaviors: Addressing Chronic Disease at Its Roots,” *Based on a Grantmakers in Health Issue Dialogue*, Issue Brief 19, (February 2004), 4.

² Department of Health and Human Services, *2010 Dietary Guidelines for Americans* (Washington, DC: December 2010), 3.

³ Department of Health and Human Services, *2010 Dietary Guidelines for Americans*, 14.

⁴ Robert Bray, et al., *2008 Department of Defense Survey of Health Related Behaviors Among Active Duty Military Personnel*, RTI/10940-FR (Research Triangle Park, NC: Research Triangle Institute, September 2009), 151.

expenditures, but those who still find themselves overweight may have their nutritional habits to blame.

Using the chronic disease of diabetes, for which obesity and poor nutrition are causal factors, a recent study found the incidence of all types of diabetes in the military community “is similar to that in the civilian population...despite weight and fitness standards.”⁵ The study also found that diabetes within the military is being diagnosed in younger adults, directly affecting “recruitment, retention, and military readiness.”⁶ While most studies equate an increased risk of diabetes with higher BMIs and obesity rates, studies that find diabetes just as common within military populations of physically fit and healthy-weight individuals in comparison to the civilian community, shift the causation toward another contributing factor: diet.

Even in the absence of being overweight, poor diet is associated with morbidity and mortality. Slender people, with poor nutritional habits, can suffer internally from diabetes, inflammation, or heart disease. A recent article in *Nature* claimed that sugar is a “toxic, addictive substance that should be regulated by the government.”⁷ Today, Americans consume approximately 22 teaspoons of sugar each day, almost 3 times the amount the American diet included just 30 years ago.⁸ This equates to the consumption of fifteen more pounds of sugar each year, compared to the American diet in 1970. Excess sugar in breads, cereals, and most processed foods, the staples of today’s

⁵ Robert Paris, et al., “Weighing in on Type 2 Diabetes in the Military: Characteristics of U.S. military personnel at entry who develop type 2 diabetes,” *Diabetes Care* 24, no.11 (November 2001), 1894.

⁶ Paris, 1895.

⁷ Robert Lustig, Laura Schmidt, and Claire Brindis, “Public health: The toxic truth about sugar,” *Nature* 482, (2 February 2012): 27-29 & Kellie White, “Sugar is a Toxic Substance: UCSF,” *NBC Bay Area*, 2 February 2012, <http://www.nbcbayarea.com/news/local/Sugar-a-Toxic-Substance-138565879.html>.

⁸ White, “Sugar is a Toxic Substance: UCSF.”

American diet, contribute to a 31% increase in daily caloric intake.⁹ Sugar itself has addictive properties, similar to tobacco, altering brain chemistry to make it extremely challenging to stop consuming it. The authors claim that even individuals who are not obese can succumb to chronic illness because excess sugar can alter the body's biochemistry. Therefore, even physically fit individuals who pass military fitness tests may find themselves suffering from preventable disease based on their dietary choices. The authors suggest that pressing for individual diet changes would not reverse this epidemic. They recommend increased taxes on processed and sugar-laden foods, as well as decreasing the availability of these foods to youth populations.

As with obesity, American culture has a problem with nutrition. With only 10% of Americans eating a healthy diet, it is not surprising that only 7.3% of Airmen are getting the daily recommended servings of fruits, vegetables, whole grains, and dairy.¹⁰ Additionally, AF members "eat significantly less fruits and vegetables than Americans in any state," according to the Healthy Airman Report.¹¹ This could point toward a cost or availability issue with respect to fresh food options offered at base facilities. It could also stem from an Airman's lack of nutritional education and subsequent development of poor eating habits. As a subset of American culture, the AF suffers from the same challenges that face other Americans. The overwhelming amount of processed and chemical-laden foods on the shelves of grocery stores and in restaurants makes it difficult to make the right choices regarding nutrition.

In addition, proper nutrition is vital to sustained, effective work performance. A study conducted by the International Labour

⁹ Let's Move, "Learn the Facts," Let's Move Website, <http://www.letsmove.gov/learn-facts/epidemic-childhood-obesity>.

¹⁰ Air Force Medical Operations Agency, *Air Force Healthy Airman Report: 2010* (San Antonio, TX: Health Promotion Operations [AFMOA/SGHC], 2010), 14.

¹¹ Air Force Medical Operations Agency, *Air Force Healthy Airman Report: 2010*, 14.

Organization revealed that poor diet reduces labor productivity by 20%.¹² Improper nutrition can degrade mission readiness and affect daily energy levels. The foods an individual eats can affect their moods, their ability to think clearly, and the amount of fatigue they experience. Studies have shown that 30% of daily dietary intake goes to fueling the brain, and eating whole foods that contain essential vitamins and minerals translates into effective decision-making, as well as precise thought and concentration.¹³ The higher the cognitive functions—including memory, focus, and concentration—the truer this is. Whole foods, full of vitamins and nutrients, support vitality, and improve health.

The Healthy Airman Report stated that many Airmen make nutritional decisions “based on their environment.” It is distressing, therefore, to learn that 54% of AF members think their leadership’s support of healthy eating is relatively non-existent. They also state that some AF environments promote increased food intake, unhealthy food choices, and physical inactivity.¹⁴ With donuts or pizza regularly available at AF workplace events, it makes sense that smart food choices are difficult for most Airmen.

Studies have demonstrated that environmental approaches can be effective strategies for developing healthy eating behaviors in youth. This strategy is similar to how regulations promoting smoke-free environments have decreased national smoking rates. By restricting children’s access to foods with low nutritional value in schools and in grocery stores, and decreasing fast-food availability, the result could be

¹² International Labour Organization Press Release, *Poor workplace nutrition hits workers’ health and productivity, says new ILO report*, (Geneva, Switzerland: ILO News, 15 September 2005), http://www.ilo.org/global/about-the-ilo/press-and-media-centre/news/WCMS_005175/lang--en/index.htm

¹³ Mike Neller, “Nutrition and Decision Making,” *Firestarter*, N.D., <http://www.firestarterspeaking.com/articles/nutrition-decision-making.php> (accessed on 18 May 2012).

¹⁴ Air Force Medical Operations Agency, *Air Force Healthy Airman Report: 2010*, 15.

significant reductions in childhood obesity rates.¹⁵ According to the CDC, the amounts of sugar and unhealthy food available to children, the lack of daily physical activity in schools, limited access to affordable and healthy food, and increased food portion sizes all contribute to unhealthy eating habits and potential obesity. Many schools are seeing the implementation of new school-lunch and vending-machine standards through the First Lady Michelle Obama's "Let's Move" campaign, but not all military bases are participating in the effort.

Civilian communities are also developing more robust and self-sustaining family strategies for nutrition. The development of community gardens and education in home gardening encourages families to find more affordable ways to work fruits and vegetables into their diets. Some families are beginning to purchase the new self-sustaining tower gardens that offer portable home gardens. These vertical aeroponic growing systems grow vegetables, herbs, flowers, and many fruits in less time than it takes in soil. The 5-foot-tall tower can grow up to 20 different items providing fresh and pesticide-free produce to individual families.¹⁶ Together with the First Lady's efforts to change school nutrition, these are just some of the ways civilian communities are changing the nutritional environment of America.

Exploring the food options at Maxwell Air Force Base provides one example of the current nutritional environment surrounding military members and their families. At the dining facility, Airmen can purchase a turkey sandwich (\$1.55, 210 calories and 3.5g fat for a comparable 6-inch sandwich) for lunch, or for the same price or less, be tempted to purchase a bacon cheeseburger (\$1.35, from 370 calories and 19g fat up to 920 calories and 62g fat, depending on size) or a chili cheese dog (\$1.60, from 340 calories and 17g fat up to 509 calories and 36g fat,

¹⁵ Grantmakers in Health, "Healthy Behaviors: Addressing Chronic Disease at Its Roots," 15.

¹⁶ Juice Plus, *Tower Garden Information Pamphlet "Grow Good Health"*, Juice Plus, Inc.

depending on size). For breakfast, cinnamon rolls (\$0.35, from 145 calories and 5g fat to 730 calories and 24g fat, depending on the size), pancakes (\$0.30, from 300 calories and 4g fat plain, to 520 calories and 14g of fat with butter and syrup), glazed donuts (\$0.15, up to 270 calories and 15g fat), and high-calorie muffins (\$0.20, banana-nut muffin is 270 calories and 14g fat) are relatively cheap, while an individual yogurt (\$0.90, 179 calories and 5.8g fat) and 4 ounces of strawberries (\$0.85, 76 calories and 0g fat) cost significantly more.¹⁷ A thorough look at the dining facility options indicates that the majority of choices are actually unhealthy, according to the Dietary Guidelines for Americans, 2010.¹⁸ Overall, this data reflects the fact that healthy food is generally more expensive than high-calorie, processed, unhealthy food.

It is unfortunate that over the last 30 years, “prices for fruits and vegetables increased nearly twice as fast as the price of carbonated drinks.”¹⁹ Sales studies have demonstrated that a 50% price reduction on fresh fruit and baby carrots “resulted in a four-fold increase in fresh fruit sales and a two-fold increase in baby carrot sales.”²⁰ A second study also suggested that a 10% subsidy for vegetables and fruits would increase consumption by 7% for fruit and 4.7% for vegetables.²¹ Military-sponsored subsidies through the commissary, food courts, dining facilities, and deployed locations, could make healthy options more affordable to service members and their families.

¹⁷ David Curley (Sustainment Flight Chief), interview by the author with documents received (Sales Items List, from Maxwell River Front Inn), 20 Feb 2012 & nutrition information obtained from:
<http://nutritiondata.self.com/facts/fruits-and-fruit-juices/1846/2> &
<http://caloriecount.about.com/calories-pancakes-plain-dry-mix-complete-i18290> (all nutritional data is approximate).

¹⁸ Department of Health and Human Services, *2010 Dietary Guidelines for Americans* (Washington, DC: December 2010), ix.

¹⁹ White House, *Solving the Problem of Childhood Obesity* (Washington DC: Task Force on Childhood Obesity Action Plan, May 2010), 55.

²⁰ White House, *Solving the Problem of Childhood Obesity*, 58.

²¹ White House, *Solving the Problem of Childhood Obesity*, 58.

Current food options on most AF bases include appropriated-funds dining facilities (Airman Dining Hall), non-appropriated-funds dining facilities (Clubs, Golf Course, Bowling Alley), contracted eating establishments (Burger King, Popeyes), contracted vending machines, and unit snack bars. A 2009 focus group found that nearly all Airmen surveyed “reported having poor eating environments with primarily high fat foods available for purchase during breaks.”²² When surrounded by a plethora of unhealthy food choices, poor nutrition and subsequent poor performance become ever more likely.

On paper, the AF does not want its members to suffer from obesity and chronic disease because of poor nutrition. According to the AF Fitness Program website, the CSAF’s fitness vision includes, a “message that health and fitness are directly related to mission accomplishment.”²³ AFI 36-2905 repeats no less than ten times that AF leaders and services should promote “healthy eating,” “optimal nutrition,” and “healthy food selections.”²⁴ In practice, however, almost every Air Force Base includes Burger King, Taco Bell, Charley’s Steakery, Anthony’s Pizza, and Popeyes Chicken as its fast food staples, making it difficult to find the “healthy food selections” dictated by the AF regulation. With these unhealthy, yet expedient and appealing, food options readily available at every base, the military practically incentivizes poor food choices.

The supply-and-demand argument suggests that individuals prefer unhealthy food. Vending machines and restaurants sell what people will buy. While true in many circumstances, the closed society of a military base poses some special challenges. One recent study revealed that half of all service members reported consuming fast food three or more times

²² Air Force Medical Operations Agency, *Air Force Healthy Airman Report: 2010*, 15.

²³ Air Force Fitness Program website, “Air Force Fitness Program,” US Air Force, <http://www.afpc.af.mil/affitnessprogram/index.asp>.

²⁴ Air Force Instruction 36-2905. *Personnel Fitness Program*, 1 July 2010.

per week.²⁵ AF members frequent fast food dining venues because it is affordable, readily available during short lunch breaks, and convenient. And fried food tastes good. Recent research is now also pointing to the possibility that the excess sugar added to the processed foods sold at fast-food restaurants is addictive. In addition, many Airmen come into the AF with poor eating habits and a lack of education regarding nutrition.

What is the AF doing about Nutritional Fitness?

Nutritional fitness is vital to maintaining a combat ready force. AF HPO objectives for nutritional fitness include increasing healthy nutrition, improving eating behaviors, and promoting healthy eating opportunities by fostering supportive policies and environments.²⁶

Education, guidance, and the availability of more healthy-food options can help the AF develop a nutritionally fit force. AF HPO is working in all those areas to improve the nutrition on AF installations. This commendable effort includes the recent attempt to embed dietitians within the basic training structure. These dietitians would be available to offer educational information and advice to young recruits. In addition, AF HPO is pressing for nutrition to be added to the basic military training curriculum, in the hopes of starting smart behavior patterns as young Airmen enter the service.²⁷

AF HPO is also instituting the “Going for Green” program in the summer of 2012 to aid Airmen in making the right choices at base dining facilities. A special menu will color-code various menu items, emphasizing fruits, vegetables, and whole grains. Green will indicate a healthy choice, while red will indicate a food choice higher in calories or unhealthy fats. Experiments with color-coded labeling within the civilian

²⁵ Scott J. Montain, Christina Cavey, and Mark Stephens, “Nutritional Fitness,” *Military Medicine*, Aug 2010 Supplement, 69.

²⁶ Air Force Medical Operations Agency, *Air Force Healthy Airman Report: 2010*, 4.

²⁷ Lt Col Tricia Vorachek (Director of AF Health Promotion Operations), interview by the author, 1 March 2012.

sector have demonstrated positive results. In one experiment, which also added a five-cent “tax” on red items, there was a 5% decrease in sales of the least healthy items and a 16% increase in the sale of most healthy items after one year. The AF has the potential to see the same type of results in base dining facilities under the new “Going for Green” program.

Lastly, AF HPO has instituted a new tool for assessing the nutritional status of various locations on AF installations. Developed by Michigan’s Department of Public Health, the Nutrition Environment Assessment Tool (m-NEAT) program assesses how well a community promotes and supports healthy eating.²⁸ The m-Neat data categorizes base food options as GREEN (fully supportive), YELLOW (mostly supportive) or RED (not/partially supportive), using a scale from one to one-hundred. Overall, the most recent m-NEAT data summary for the AF revealed that military dining facilities, convenience stores, worksite settings, base commissaries, and school programs (meals, vending, policies) on average were GREEN, though just barely. The base sit-down restaurants, fast-food restaurants, and fitness centers on average were YELLOW. It should be noted that fast-food restaurants barely scored the YELLOW rating. Falling in the RED category were the billeting barracks and non-refrigerated vending machines. Overall, out of 48 bases reporting for the assessment, the AF received a score of 68, which falls in the YELLOW category. The m-NEAT is still a new tool for the AF, and AF HPO is hopeful that the results will improve in the near future after the implementation of their other nutritional programs.

One recent change in AF nutrition policy is the AF Food Transformation Initiative (FTI). The FTI came about following multiple AF surveys indicating that many AF members were “not satisfied with the

²⁸ White House, *Solving the Problem of Childhood Obesity*, 52.

quality, variety and availability of food at Air Force bases.”²⁹ In response, the AF launched the FTI to improve on-base food services.

One of the main initiatives of the FTI allows meal cardholders (Airmen on the meal plan and living on base) to visit any non-appropriated-funds (NAF) dining facility for their meals. It is akin to campus style dining on most college campuses, where most establishments are on the student meal plan. The publicity surrounding the AF FTI touts it as an opportunity to offer healthier options to Airmen. However, the AF has no control over the nutritional value of NAF facility food, including the meals at the golf course, the clubs, or the bowling alley.³⁰ In addition, it is difficult to believe that offering the opportunity for Airmen to eat at these facilities automatically equates to healthier food choices. The FTI will begin in the summer of 2012 with six test bases, so the official results of the effort will not be available for some time. It is interesting to note that as AF HPO is pressing for healthier options, and color-coded food identification at the AF dining facilities, the FTI is encouraging Airmen to eat elsewhere.

In July 2011, the Government Accountability Office (GAO) published a study on the AF FTI. The purpose of the study was to undertake a comprehensive review of the FTI and provide recommendations for the AF. Unfortunately, at the time of the study, the AF did not offer any data or metrics, nor was there an effective evaluation plan, for analyzing the FTI’s efforts.³¹ At the time of the GAO study, there were delays in the implementation of the meal-card plan, so assessments were not possible. Out of the three options for improving AF food services, two were not even viable because they met only three of

²⁹ Government Accountability Office, “Actions Needed to Improve Management of Air Force’s Food Transformation Initiative,” *Defense Management* (July 2011): 1. <http://www.gao.gov/new.items/d11676.pdf>.

³⁰ George Miller (Chief of Operations, AF Services Agency), interviewed by author, 23 February 2012.

³¹ Government Accountability Office, “Actions Needed to Improve Management of Air Force’s Food Transformation Initiative,” 1.

the program's eight specified objectives. Ultimately, the GAO recommended that the AF develop a comprehensive evaluation plan prior to moving beyond the pilot program, in order to adequately assess the initiative's progress and make educated decisions about the initiative's future.³²



³² Government Accountability Office, "Actions Needed to Improve Management of Air Force's Food Transformation Initiative," 1.

Conclusions

This thesis argues that unhealthy lifestyle habits associated with tobacco and alcohol abuse, obesity, physical inactivity, and poor nutrition significantly contribute to rising health care costs and decreased military readiness. While these habits are the product of an even larger national pattern of unhealthy behaviors, it is prudent to pursue policies that will enhance military readiness and eliminate unnecessary military health care costs, which drain funds from mission functions. With over 60% of military health care spending going for non-active-duty beneficiaries, any strategy that addresses changing the lifestyle behaviors of military members should also include retirees and dependents. A comprehensive recommendation should address behavior at the individual, family, and organizational levels.

Some positive steps have already been taken. AF HPO is targeting healthy behaviors through tobacco-free living, healthy weight, nutritional fitness, physical activity, and community collaborations to provide standardized interventions that can help to change the cultural norm toward choosing healthier lifestyles. Together with the Intervention Pyramid (Figure 2), AF HPO aims to develop cost-effective, wide reaching interventions for AF service members.¹

Tobacco Use and the Future

Smoking contributes to decreased readiness in individual members and contradicts AF values and quality of life priorities. However, the AF is doing better than the other services and is roughly on par with the civilian sector concerning its current smoking rate. The recent changes in AFI 40-102 could have a significant impact on future smoking rates, and AF HPO's focus on tobacco cessation programs is commendable.

¹ Air Force Medical Operations Agency, *Air Force Healthy Airman Report: 2010* (San Antonio, TX: Health Promotion Operations [AFMOA/SGHC], 2010), 3.

AF HPO acknowledges the stagnation of the current tobacco use rates and reveals a need for more effective tobacco strategies to help Airmen quit the habit, or prevent them from becoming smokers in the first place. However, tobacco use and the subsequent cost is not isolated to the active-duty member. For any tobacco prevention or cessation strategy to be complete, it must include resources and help for both the military member and the other TRICARE beneficiaries. AF HAWCs are required to provide standardized tobacco cessation programs; however, according to AF HPO, there is room for improvement in the consistency of program implementation and the promotion of such programs to military dependents and retirees.² In addition, although AF culture may frown upon smoking and the new regulation is more restrictive on tobacco use, the limited strategy still leaves enablers for dependent tobacco users, including the ability to use DTAs and the benefits of a subsidized negative habit.

Current AF policy changes are limited in scope, suggesting that AF leadership believes smoking is a low priority, with minimal mission impact. However, similar to civilian hospitals and college campuses, attacking the problem of tobacco use is the right thing to do for AF members, their families, retirees, and the organization itself. Changing the environment and the availability of tobacco products within the civilian sector has demonstrated a reduction in tobacco use; similarly, the AF can also change tobacco-use behaviors. The AF could implement straightforward AF-wide policies, pushing to remove tobacco subsidies and regulating 100% tobacco-free bases, with a continued emphasis on prevention and cessation programs for all beneficiaries. With very little investment, the AF has the potential to reach the HHS goal of a 12% smoking rate, while also improving the quality of life for all AF personnel.

Alcohol Abuse and the Future

² Air Force Medical Operations Agency, *Air Force Healthy Airman Report: 2010*, 3.

Alcohol abuse raises health care costs through direct care for alcohol-related illness and chronic disease, and it diminishes the productivity of the individual alcohol abuser. It also significantly contributes to the decreased readiness of not only the individual, but also his or her unit's ability to accomplish the mission. While the AF is doing better than the other services in terms of binge drinking and heavy drinking rates, its own rates of abuse significantly increased between 2005 and 2008 and these rates are higher than those in the civilian sector.

AF HPO has deferred to ADAPT for alcohol prevention and cessation strategies for military members, and there are currently no programs available to address alcohol use amongst the other beneficiaries. While the ADAPT program can help identified alcohol abusers, it is limited in its prevention and education capabilities. The "That Guy" and technical school BAI programs are showing promising potential, but it is still too early to identify them as successful alcohol prevention programs. Additionally, the current perception that AF culture encourages binge drinking combined with alcohol subsidies send contradictory messages to young Airmen.

With drinking rates increasing AF-wide, current prevention and cessation strategies are not achieving the stated goals. Continuing to develop innovative and effective alcohol-abuse strategies is critical to ensuring that the AF is mission ready. The AF should start by eliminating the alcohol subsidy and offering beneficial programs to retirees and family members. More research may be required to determine system-wide approaches that can modify portions of the military environment that will have the most effect on alcohol reduction. While current efforts to de-glamorize alcohol and shift the AF culture away from alcohol-centered events should continue, the AF needs to push leaders at all levels to remove the current perception that the AF

encourages excessive alcohol abuse. This will not be an easy task. It is a complex challenge that will require an institutional investment from the top of the organization down. AF members, retirees, and their dependents deserve organizational assistance in combating and preventing alcoholism; and commanders deserve organizational policies that will support, and not contradict, alcohol-prudent policies.

Obesity and the Future

Obesity rates are on the rise within the AF, as the fitness assessment unfortunately reveals a continuing service-wide obesity problem, and the service has limited data and very few programs that target this issue directly. However, nutritional-fitness and physical-activity interventions do indirectly affect obesity. These programs are new, and due to a lack of tracking mechanisms it is difficult to determine their effects on the AF population. Studies have shown that decreases in body weight have equated to reductions in health care costs, therefore it is in the AF's best interest to explore policies and programs targeting weight loss.

The service should continue to implement aggressive weight-management strategies, including punishments for multiple failures of body fat and AC measurements, as well as incentives for healthy-weight behaviors. Commander-directed policies that encourage a zero-tolerance of obesity, as well as supportive programs to help Airmen develop healthy weight habits, are essential.

As with other health remedies, obesity interventions should target the family-member and retiree populations to encompass a strategy that will have lasting effects on the members themselves and on the AF's contribution to military health care costs. The AF can promote programs like HBHL, "Let's Move" and MOVE! to help dependents and retirees maintain a healthy weight. Not only military members need to understand how to establish healthy weight and body composition goals,

but dependents and retirees also need assistance and education. This will help them make the right choices when it comes to physical activity and nutrition, so that they too can maintain healthy body weights and BMI numbers, as well as an improved quality of life. As healthy weight beneficiaries, they decrease their risk of becoming obese, developing chronic disease, and contributing to unnecessary health care costs.

Physical Activity and the Future

Currently, the AF is doing very well in the category of physical fitness, but there is always room for improvement. The AF can make this strength even stronger. There are several ways to ensure military members are engaging in the right quantity and quality of physical exercise. Broader interventions that reach a wider audience include more strict rules and regulations for physical activity, similar to the Marine Corps regulations, and service-wide exercise incentives, which the AF already supports. HAWC programs that track environmental factors such as running trails, bike shares, and fitness-facility upgrades could ensure best practices are shared amongst all bases. Additionally, medical professionals and AF HAWCs can continue to use targeted interventions for individuals who fail to meet AF fitness standards in the hopes of preventing increases in the number of failures.

While AF efforts toward improving physical activity rates are commendable, there is potential to improve with minimal cost. The AF and the Navy are the least restrictive of the services concerning mandatory physical fitness, placing the majority of the responsibility on the individual member rather than the unit commander. With obesity rates higher, and weekly physical activity rates lower in the AF than in the Marine Corps and US Army, it is possible that leaving the responsibility to the individual is not the most effective strategy to ensure the physical fitness of service members. In addition, AF members describe one of the barriers to fitness being the AF service culture, which

does not provide enough unit physical training time. This is especially true for members of a unit with a commander who considers physical activity as a low priority. In the absence of mandatory time for physical activity, individuals without proper time management skills might have a harder time balancing the requirements for staying physical fit, and thus being ready for their daily mission.

Individual programs offered through the AF base HAWCs, like BE WELL, also offer opportunities to improve the fitness level of members. Classes range from nutrition information, to cooking, to overall wellness classes; however, most HAWCs offer only a sporadic schedule due to low attendance. Without failing a FA, these opportunities are offered only on a space-available basis, and require individual motivation for attendance. Furthermore, they must overcome the stigma associated with attending what is known as a “remedial class.” Once again, individual responsibility may not be the most effective strategy for changing individual unhealthy behaviors, especially those related to obesity and physical inactivity. The HAWC should be a conduit for the facilitation of various health programs, encouraging healthy behaviors for military members, dependents, and retirees.

Low-cost policy changes enforcing mandatory unit PT programs can make up where individual responsibility and motivation are lacking. In addition, AF HAWCs could offer more effective fitness programs together with improved publicity campaigns. This can help to change the stigma associated with a HAWC visit and ensure wider-scale participation in beneficial programs. These classes could also be available and promoted to military retirees and dependents, as physical fitness should be a culture inspired throughout the entire AF family.

Nutritional Fitness and the Future

Airmen who fuel their bodies with proper nutrition tend to maintain a healthy body weight, prevent chronic disease, and ensure the

successful accomplishment of the AF mission. While the AF pays attention to the overall fitness of AF members through physical fitness testing, the strategy is incomplete without analyzing the internal fitness of the members through a study of nutritional fitness and individual eating habits. A productive and mission-ready Airman is not fit through exercise alone. Successful energy management depends on consistent and healthy eating patterns.³ While the AF is making efforts to improve nutritional fitness, there is still room for improvement in this area.

Most branches of the armed services lack dietetic professionals and educational tools to help commanders guide their troops toward healthier nutritional fitness.⁴ Adding dietitians to basic military training, is the first step toward true educational change on the topic of nutrition. AF leadership can continue to help Airmen make the right decisions by inserting nutritional education at various milestones in an individual's AF career. The AF can promote healthy eating habits by introducing nutritional education during initial training, reinforcing it as Airmen develop, and then shifting the focus toward leadership skills to teach them how to help their Airmen stay fit, as members gain rank and responsibility.

The AF nutrition strategy is incomplete without addressing the entire AF family. Targeting family members through credible programs offered by the HAWCs, and offering healthy options at base schools and dining facilities, will support healthy eating efforts. Similar to First Lady Michelle Obama's "Let's Move" campaign, the AF could decrease or limit the number of unhealthy food choices available to service members, adjust the types of food offered in vending machines, and increase the cost of these foods rather than offering them at tax-free prices.

³ Jim Loehr and Tony Schwartz, "The Making of a Corporate Athlete," *Harvard Business Review* (January 2001): 124. Very similar to the corporate athlete concept described by Mr. Loehr and Mr. Schwartz.

⁴ Scott J. Montain, Christina Cavey, and Mark Stephens, "Nutritional Fitness," *Military Medicine*, Aug 2010 Supplement, 70.

Addressing this issue does not mean replacing vending-machine candy with apples, but rather providing educational programs to motivate AF members to make the right choices when it comes to food. The AF need not regulate nutritional selections, but institutional self-interest, to say nothing of the best interest of the Airmen, suggests that it provide education on nutrition and equal amounts of healthy options at on-base establishments. Without education and choice, the cheap, appealing, unhealthy choices will continue to prevail.

Another way the AF could help members and families with their nutritional fitness is through an update of the food options offered on base. The FTI and AF HPO are working to increase the availability of whole grains, fruits, and vegetables at on-base dining facilities. While limited in scope, as these interventions only address the base dining facilities and not the NAF food options, it is a step in the right direction. In addition, many individuals have specific dietary requirements as more children and even adults with specific food allergies are developing various chronic diseases. The AF should incorporate dairy-free or gluten-free options at on-base facilities, as they currently have no plan to adjust for these needs, and they should encourage the commissary to continue expanding its alternative food options to help families work these dietary considerations into their budget.

In addition, the AF could help families by offering subsidies to encourage healthier food choices. With a moderate amount of funding, options like aeroponic growing systems, perfect for military families that regularly move, as well as healthy food subsidies, base community gardens, and educational opportunities can provide invaluable exposure to help AF members and their families develop healthy eating behaviors. These changes can help families maintain a healthy weight, reduce the risk of chronic disease, decrease health care costs, ensure military readiness, promote overall health, and build stronger AF family units.

Recommendations for the Future

This thesis analyzed four areas of health: substance abuse (tobacco and alcohol), obesity, physical activity, and nutritional fitness. The AF is doing well in some areas, compared with other military services and the American population at large. However, the AF also trails the other services in some areas and lags far behind best practice in some civilian venues. In all four areas analyzed in this study, the AF has room for improvement. The challenge is determining the most cost-effective, mission-oriented way to improve the health and wellness of the people served by the military health system.

This study suggests that minor, carefully-chosen reforms can actually improve health and readiness while lowering cost. Health and wellness programs exist, but the easiest and most cost-effective solution is in the hands of Air Force leadership. Air Force commanders at all levels should set the standard and reinforce healthy behaviors. With a few policy changes and leaders setting the standard for healthy lifestyle behaviors within the Air Force culture, the service can save money and increase readiness.

Promoting positive lifestyle behaviors is the right thing for the AF to do; it will improve the quality of life for the military member and his or her family, in accordance with official AF priorities. In addition, it will increase individual readiness and it can reduce unnecessary health care costs leaving more funds available for mission accomplishment. The time is right for Air Force leadership to insist that the other members of the Air Force family follow their lead, transforming the current Air Force rhetoric into reality. Due to the hierarchical structure of the military, as a government and military institution, certain wide-scale policy and behavior adjustments have the potential to change the Air Force health culture and break the cycle of exploding costs, becoming a powerful agent for change within America.

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