

# Smoking Prevalence among US Veterans

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**BACKGROUND/OBJECTIVE:** Cigarette smoking is a significant health problem within the US military. Data from the 2003–2007 Behavioral Risk Factor Surveillance System (BRFSS) were used to estimate and compare the prevalence of smoking among US veterans with that of adults who did not serve in the US armed forces.

**METHODS:** Data from the BRFSS, a state-based random-digit dialed telephone survey supported by the Centers for Disease Control and Prevention, were used to estimate the prevalence of current smoking among adults (aged  $\geq 18$  years) who reported ever serving on active duty in the United States Armed Forces. We compared, by birth cohort, age-adjusted smoking prevalence among veterans with that of adults who did not serve in the military.

**RESULTS:** A total of 224,169 US veterans participated during 2003–2007. The age-adjusted prevalence of smoking during the period was 27.0% (standard error, 0.36) among veterans and 21% (0.12) among non-veterans. For both groups, the prevalence decreased across years from 29% (0.79) in 2003 to 25% (0.82) in 2007 among veterans and from 23% (0.29) in 2003 to 20% (0.26) in 2007 among non-veterans. Among veterans, smoking prevalence was highest among men born between 1975–1984 (36%; 90%CI=33.7–37.5) and those born between 1985–1989 (37%; 90%CI=31.7–48.2) with lower prevalences among men born between 1945–1954 (26%; 90%CI=25.1–26.3), 1955–1964 (33%; 90%CI=32.3–34.3), and 1965–1974 (27%; 90%CI=26.0–28.1). The prevalence of smoking was 43% (90%CI=39.0–47.6) among veterans with self-reported coronary heart disease (CHD), greater than that for non-veterans with CHD (31%; 90%CI=28.6–33.1).

**CONCLUSIONS:** Although the prevalence of smoking has declined among US adults, there are opportunities to further reduce smoking among US veterans, particularly young veterans for whom the prevalence of smoking is similar to that of the US adult population during the late 1960s/early 1970s. Continued work is necessary to target the high smoking prevalence among veterans with CHD, a group for which smoking cessation is especially important.

**KEY WORDS:** smoking; veterans; prevalence; Behavioral Risk Factor Surveillance System.

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## INTRODUCTION

The negative health consequences of smoking and secondhand smoke exposure are well documented.<sup>1,2</sup> Smoking is responsible for at least 30% of all cancer deaths, for nearly 80% of deaths from chronic obstructive pulmonary disease and as well as early cardiovascular disease and deaths.<sup>1</sup> An estimated 443,000 Americans die from diseases directly related to cigarette smoking each year,<sup>3</sup> and smoking is estimated to be responsible for more than 5 million deaths per year worldwide.<sup>4</sup>

Cigarette smoking is a significant health problem within the US military. Estimated costs of smoking among US military health care system beneficiaries were more than \$900 million per year in 1995 (\$584 million in direct health care costs and \$346 million in lost productivity among active duty personnel).<sup>5</sup> Recent data suggest the prevalence of smoking might be increasing among active duty military personnel.<sup>6</sup> Using data from the 2003–2007 Behavioral Risk Factor Surveillance System (BRFSS), the authors estimated the prevalence of smoking among US veterans and compared it with that of persons who did not serve in the US armed forces. In addition, the prevalence of smoking was estimated among veterans with self-reported, physician-diagnosed coronary heart disease (CHD).

## METHODS

A description of the design and sampling procedures of BRFSS is available at [www.cdc.gov/brfss](http://www.cdc.gov/brfss). The BRFSS is a state-based surveillance system that collects data on many of the behaviors and conditions that place adults (aged  $\geq 18$  years) at risk for chronic disease. Trained interviewers collect data on a monthly basis using an independent probability sample of households with telephones from the non-institutionalized U.S. population. Median response rates, an indicator of the potential for bias in the results of a survey (not indicate the actual amount of bias), during the 5-year period ranged from 51–57% across states, territories and the District of Columbia. Despite low response rates, BRFSS data have been shown to be valid and reliable when compared with other national surveys, and bias in demographic characteristics of respondents in BRFSS data was not associated with response rate.<sup>7</sup> The BRFSS has been approved as exempt research by the

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Veterans were identified as those who gave an affirmative response to the question, "Have you ever served on active duty in the United States Armed Forces, either in the regular military or in a National Guard or military reserve unit?" Approximately 13% of respondents were veterans (2000 Census estimate, 12.7% of civilians age  $\geq 18$  years). Of the 224,169 veterans who participated in the survey during this period, 93% were men.

Respondents who smoked 100 cigarettes in their lives and currently smoked were considered to be current smokers. Surveyed adults were asked, "Has a doctor, nurse, or other health professional ever told you that you had a heart attack, also called a myocardial infarction?" and "Has a doctor, nurse, or other health professional ever told you that you have angina or coronary heart disease?" Those who responded affirmatively to either question were considered to have CHD.

Data were weighted to produce national estimates, and SUDAAN v9 (Research Triangle Institute, 2005) was used to account for the complex sampling.

## RESULTS

The age-adjusted prevalence of smoking during the 5-year period is shown in Table 1 for men and women. With the exception of female veterans, the prevalence decreased across years for both veterans and non-veterans (Table 1). Among veterans, smoking prevalence was highest among men (40%; 90%CI=31.7–48.2) and women (44%; 90%CI=32.4–56.3) born between 1985–89 and those born between 1975–84 (Table 1). Low smoking prevalences among those from earlier birth

cohorts may reflect smoking-related mortality among these older age groups.

After age-adjustment, an estimated 6.3% (90%CI=6.1–6.5%) (n=28,233) of male veterans and 4.5% (90%CI=4.1–4.9%) (n=1074) of female veterans had CHD, whereas about 5.5% (90%CI=5.4–5.6%) (n=21,611) of male and 3.5% (90%CI=3.4–3.6%) (n=50,903) of female non-veterans reported CHD. Among men, the prevalence of smoking was 43% (90%CI=39.0–47.6%) among veterans with CHD, greater than that for non-veterans with CHD (31%; 90%CI=28.6–33.1%). Similarly for women with CHD, the prevalence of smoking was 30% (90%CI=22.9–36.1%) among veterans and 28% (90%CI=26.1–29.5%) among non-veterans. Smoking prevalence for veterans and non-veterans, respectively, without CHD was 27% (90%CI=26.1–27.3%) and 21% (90%CI=20.6–21.1%) among men and 23% (90%CI=21.7–23.7%) and 18% (90%CI=18.3–18.5%) among women.

## DISCUSSION

The well-known adverse effects of smoking and the documented benefits of quitting<sup>8</sup> notwithstanding, the prevalence of smoking among US veterans remains high. In fact, the prevalence of smoking among young veterans is similar to that of the US adult population during the late 1960s/early 1970s.<sup>9</sup> The adoption of smoking as a means of self-medicating to deal with affective disorders through the psychoactive actions of nicotine has been described.<sup>10</sup> Clinicians treating veterans should be aware of the possibility of self-medication since this may impact the effectiveness of smoking cessation. More generally, clinicians should be aware of the potential role of trauma in a wide range of health issues, either as a risk factor or as an exacerbating factor.<sup>11,12</sup>

The prevalence of smoking is also high among those with prevalent CHD. Smoking cessation is essential for patients with CHD. Current guidelines<sup>13</sup> recommend that clinicians ask about tobacco use and provide counseling about quitting within the context of a comprehensive plan for secondary prevention.<sup>13,14</sup> Available strategies include identifying and documenting smoking status in all patients, referral for consultation and counseling, prescription of appropriate drugs in accordance with clinical guidelines, and the provision of quit lines and community support services.<sup>15</sup> In addition, increases in health insurance coverage for smoking cessation and initiatives to promote cessation at the work site are needed,<sup>16</sup> as is enforcement of smoke-free legislation in public places, including on military bases.

These results are subject to some limitations. The BRFSS is a telephone-based survey and persons of low socioeconomic status, a characteristic associated with CHD and smoking, are less likely to have a telephone in the household (i.e., landline) and therefore to be included. Prior research has shown some differences in socioeconomic status and prevalent health conditions (i.e., asthma, diabetes) or risk factors (i.e., physical inactivity, hypertension, binge drinking) between persons who maintain a landline only and cell phone only.<sup>17</sup> In addition, these data exclude institutionalized persons, perhaps including those with severe health conditions. Therefore, prevalence estimates may be underestimated. Finally, these data are self-reported. The limitations and validity of self-reported smoking have been reviewed.<sup>18,19</sup>

**Table 1. Period Prevalence of Current Smoking among Men and Women by Veteran Status: Behavioral Risk Factor Surveillance System, 2003–2007**

	Men		Women	
	Veteran % (s.e.)	Non-veteran % (s.e.)	Veteran % (s.e.)	Non-veteran % (s.e.)
Survey year <sup>a</sup>				
2003	29 (0.79)	23 (0.29)	22 (0.63)	20 (0.19)
2004	26 (0.67)	21 (0.28)	26 (1.57)	19 (0.18)
2005	27 (0.84)	21 (0.28)	23 (1.30)	19 (0.17)
2006	27 (0.92)	20 (0.29)	22 (1.41)	18 (0.18)
2007	25 (0.82)	20 (0.26)	22 (1.31)	18 (0.17)
5-year period	27 (0.36)	21 (0.12)	23 (0.63)	18 (0.08)
Birth cohort				
1900–14	2 (0.74) <sup>b</sup>	1 (0.68) <sup>b</sup>	12 (6.48) <sup>b</sup>	2 (0.51)
1915–29	6 (0.28)	5 (0.40)	6 (0.95)	5 (0.14)
1930–44	14 (0.24)	13 (0.27)	19 (1.92)	13 (0.14)
1945–54	26 (0.38)	20 (0.29)	19 (1.12)	18 (0.17)
1955–64	33 (0.60)	24 (0.26)	27 (1.08)	23 (0.18)
1965–74	27 (0.63)	23 (0.28)	23 (1.17)	20 (0.18)
1975–84	36 (1.16)	30 (0.38)	26 (1.63)	23 (0.24)
1985–89	40 (5.09)	22 (0.64)	44 (7.39)	19 (0.53)

s.e., standard error

<sup>a</sup> age-adjusted

<sup>b</sup> indicates estimate is unstable with a relative standard error in excess of 30% of the point estimate

In conclusion, although the prevalence of smoking has declined, opportunities exist to further reduce smoking among US veterans. Ultimately, smokers must decide that they need to quit smoking. Clinicians have a responsibility here to assist patients, and health insurance plans need to cover treatment. Opportunities remain for the military to develop more effective prevention programs and to institute policies that foster a smoke-free environment. I hope these findings and those of others will stimulate further efforts to design and implement cost-effective programs for cessation that reach all patients, including current and former US military personnel.

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**Conflict of Interest:** None disclosed.

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