

# Effect of an eight week smoking ban on women at US Navy recruit training command

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## Abstract

**Objective**—To examine the effect of a unique organisational smoking ban on female United States Navy recruits, a population with historically high smoking rates.

**Setting and design**—Study participants were female recruits (n = 5503) entering the Navy recruit training command between March 1996 and March 1997 (12 consecutive months). Participants completed smoking surveys at entry to recruit training (baseline) and again at graduation from training after exposure to an eight week, 24 hour a day smoking ban. Effects of the ban on baseline to graduation changes in perceptions of being a smoker were examined, and relapse rates among baseline ever smokers was assessed three months after leaving recruit training.

**Results**—Among all recruits, 41.4% reported being smokers at entry (that is, reported any smoking in the 30 days before entering recruit training). As a result of the ban, there was a significant reduction (from about 41% to 25%,  $p < 0.001$ ) in the percentage of all women recruits who reported themselves as smokers, a much larger change than expected had no ban been in place. Relapse at the three month follow up varied according to the type of smoker at entry into the Navy, with rates ranging from 89% relapse among baseline daily smokers to 31% among baseline experimenters.

**Conclusions**—Findings suggest that the ban provides some smokers who desire to quit with an external impetus and support to do so. However, high relapse rates indicate that more than an organisationally mandated smoking ban during recruit training is needed to help younger smokers, more regular smokers, and those who intend to continue smoking to quit after joining the Navy.

(*Tobacco Control* 2000;9:40-46)

Keywords: military; women; smoking ban

## Introduction

Tobacco use is of particular concern to the United States Department of Defense (DoD). This is because the military has historically had higher and heavier rates of tobacco use than civilians<sup>1</sup> and because of the adverse effects of smoking on personnel health and performance.<sup>2-3</sup> Although smoking in the mili-

tary has decreased dramatically since 1980,<sup>4</sup> the prevalence continues to be well above the Healthy People 2000 goal of 20% for the military<sup>5</sup> as well as above civilian rates. In addition, studies show high rates of smoking persist even after discharge from military service.<sup>6-7</sup> Of particular concern to the DoD is the findings of a study comparing substance use in standardised samples of civilians and military personnel, which concluded that military women are more likely to smoke and to smoke more heavily than their civilian counterparts.<sup>1</sup> Smoking can be especially damaging during the reproductive years when cigarette use can have a negative impact on pregnancy and the health of the unborn child, the newborn, and young children exposed to secondhand smoke.<sup>8-9</sup>

Military smoking rates have declined in recent years due at least in part to military health promotion efforts, yet increased support for cessation is needed to reduce smoking rates further.<sup>10</sup> Few studies have examined smoking cessation among older adolescents, the typical age of women and men who join the military. The data reviewed indicate that adolescent smokers frequently try to quit, but are usually not successful.<sup>11-13</sup> Even more discouraging, cognitive behaviourally oriented cessation interventions that have been effective with adults have not shown much promise when tried with adolescents.<sup>14-15</sup> The absence of effective intervention for young smokers is cause for concern, since adolescent smokers will likely become adult smokers.

Correlational and econometric studies show that restrictive smoking regulations at work have a significant effect on cigarette consumption.<sup>16-17</sup> The effect appears to be even stronger for young smokers than for adults,<sup>18</sup> probably by realigning normative perceptions of smoking and by reducing convenient opportunities to smoke.<sup>15</sup> In the military, comprehensive DoD and United States Navy specific policies have been implemented that address the prevention and reduction of smoking by mandating smoke free work places and cessation support for personnel.<sup>19-20</sup> The Navy, for example, now prohibits tobacco use at recruit training command for the eight week duration of basic training, which all new recruits undergo upon entering the Navy.

The smoke free policy at the Navy recruit training command, implemented in 1987, is unique among worksite policies because it is enforced during the entire eight week period of "live in" training, in contrast to workplace smoking policies that can only be enforced

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Received 20 April 1999 and  
in revised form 25 August  
1999.

Accepted 9 September 1999

Table 1 Sociodemographic characteristics of Navy women recruits (1996–97)

| Sociodemographic characteristic | Navy recruit sample |      |
|---------------------------------|---------------------|------|
|                                 | %                   | n    |
| Age                             |                     |      |
| 17–18 years                     | 40.9                | 2253 |
| 19–23 years                     | 50.2                | 2761 |
| 24–35 years                     | 8.9                 | 465  |
| Education                       |                     |      |
| Less than high school           | 5.5                 | 302  |
| High school                     | 85.1                | 4666 |
| More than high school           | 9.4                 | 513  |
| Race/ethnicity                  |                     |      |
| White, non-Hispanic             | 57.9                | 3169 |
| African American                | 23.3                | 1273 |
| Hispanic                        | 12.2                | 670  |
| Asian/Pacific Islander          | 4.2                 | 228  |
| Native American                 | 2.4                 | 130  |

ns within a sociodemographic characteristic do not total 5503 because of small amounts of missing data.

during working hours. Furthermore, the military environment, having a strong authoritarian component, can mandate compliance, thereby reducing the probability of “cheating”. The impact of this type of intense tobacco restriction on women’s short and longer term smoking status is unknown, although older studies conducted with male recruits suggest a positive effect of the ban on subsequent smoking behaviour.<sup>21 22</sup>

The present study evaluates the short term impact of the recruit smoking ban on women’s smoking status. Specifically, two questions are investigated: (1) after exposure to the recruit

training command (RTC) 24 hour per day no smoking policy (that is, mandatory “cold turkey” cessation for eight weeks), do a significant number of women who smoked when they entered the Navy modify their self perception as smokers and report that they are non-smokers or former smokers at the end of recruit training?; and (2) what percent of women smokers relapse into smoking within three months after having spent an eight week period of mandatory cessation?

## Methods

### PARTICIPANTS

Study participants consisted of volunteers from among all female recruits entering the Navy RTC at Great Lakes, Illinois, between March 1996 and March 1997 (12 consecutive months). Over the course of the year, 5503 women provided consent and completed entry (baseline) smoking surveys—93% of those eligible based on counts of recruits provided by RTC rosters. Refusals to provide consent and complete the entry survey were virtually non-existent; the 7% of women not completing entry surveys failed to primarily because of scheduling conflicts. Near the time of graduation from RTC, 4411 women completed graduation surveys, 86% of those still at RTC. Non-response to the graduation survey was almost entirely the result of scheduling conflicts.

Table 1 presents sociodemographic characteristics of women entering the Navy over the one year period. In general, women recruits were young, with over 90% being less than 24 years of age. The mean (SD) age was 19 (2.75) years. The majority (94.5%) had at least a high school education. Recruits were ethnically diverse, with 42% belonging to ethnic groups other than white non-Hispanic.

### DATA COLLECTION

Recruits completed entry smoking surveys within the first days of reporting to RTC, and completed graduation surveys about eight weeks later just before graduation from RTC. Recruits who reported on the entry survey that they were ever smokers (that is, daily smokers, occasional smokers, experimenters, or former smokers) comprised the follow up study group of “smokers” who were mailed a three month postgraduation follow up survey to assess smoking relapse. The rationale for the inclusive, liberal definition of “smokers” was based on previous studies of Navy personnel which suggest that former smokers at entry, and even those who had even experimented with smoking, may be at risk for smoking regularly once joining the Navy.<sup>21</sup> Figure 1 presents a flowchart of the targeted sample and response rates for surveys conducted at entry, graduation, and three month follow up.

This study used several Navy data sources to locate and track study participants after graduation from RTC for the purpose of conducting the three month postgraduation smoking survey. At least two attempts were made to deliver the three month surveys to “smokers”. A number of strategies were used to maximise

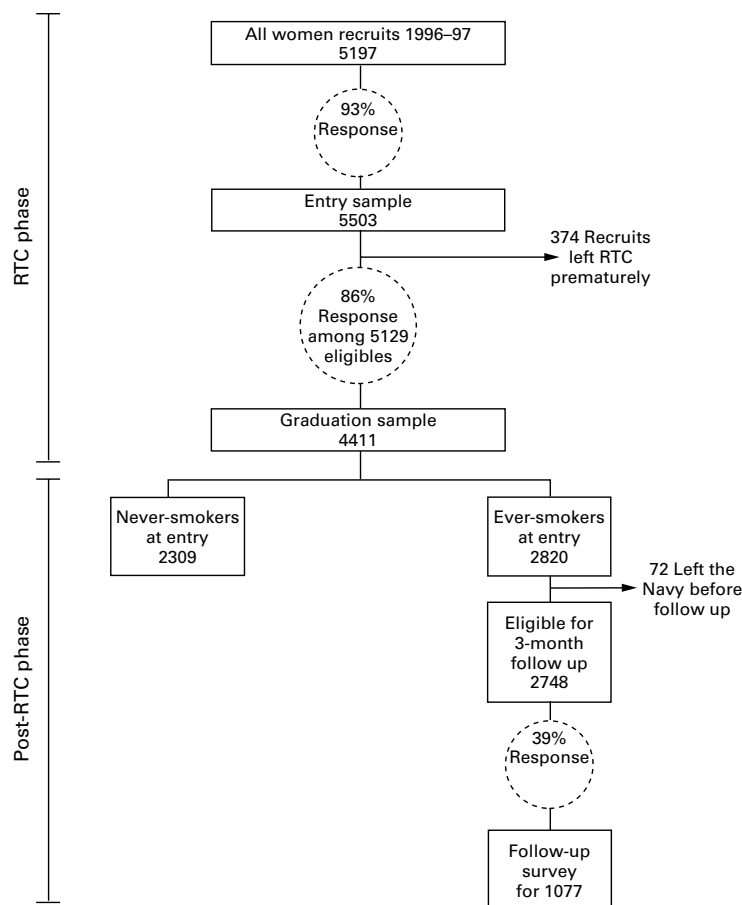


Figure 1 Flowchart of Navy women recruit sample at entry, graduation, and three month follow up.

response to the three month survey that included incentives, reminders, and different survey administration procedures.<sup>23</sup> As shown in fig 1, the response rate to the three month survey was 39%, higher than that typically seen among lower enlisted military personnel.<sup>24-25</sup> However, analysis revealed a response bias to the three month survey, such that non-respondents had a slightly higher past 30 day smoking rate at baseline than did respondents.<sup>23</sup>

#### MEASURES

##### *Perceptions of being a smoker*

Self reports of being a smoker was the primary dichotomous variable of interest, although the definition differed at graduation from that used at entry and the three month follow up. Self reports of any smoking within the 30 days before RTC designated the individual as a smoker at entry. Because of the ban during RTC, smoking at graduation necessary was based on perceptions of being a smoker rather than on reports of actual behaviour. The graduation survey item "How would you currently describe yourself" provided the following response options to all recruits: (1) never smoked, (2) non-smoker/former smoker, or (3) smoker, even though not allowed to smoke during training. The first two categories were combined to represent those recruits who classified themselves as non-smokers at the end of training, and those choosing the last response were considered smokers at the end of training. On the three month postgraduation follow up survey, self reports of smoking within the last 30 days designated the individual as a smoker at follow up.

##### *Predictor variables*

A number of sociodemographic and entry smoking variables were examined as correlates of entry to graduation changes in perceptions of being a smoker. These included: (a) age group (17–18 years, 19–23 years, and 24–35 years); (b) race/ethnicity (white non-Hispanic, African American non-Hispanic, Hispanic, Asian/Pacific Islander, and Native American);

(c) education (less than a high school education, high school, and greater than a high school education); (d) the individual's self identified type of smoker (experimenter, occasional smoker, daily smoker, and former smoker at entry to RTC); (e) intentions to smoke after leaving RTC measured on a scale ranging from 1 (definitely no) to 4 (definitely yes); (f) number of cigarettes typically smoked per day during the 30 days before entering RTC, measured on a scale ranging from 1 (< 1 cigarette on average) to 10 (> 40 cigarettes); and (g) minutes after waking one typically had the first cigarette of the day during the 30 days before entering RTC, measured on a scale ranging from 1 (immediately) to 6 (more than two hours after waking). These last two variables are commonly used indicators of addiction to nicotine.<sup>26-27</sup> This same set of predictors was used in an analyses of potential correlates of relapse at the three month follow up, with the addition of two variables measured at graduation: (a) intentions to smoke after leaving RTC as measured at graduation; and (b) perceived smoking status at graduation (smoker *v* non/former smoker).

## Results

### ENTRY TO GRADUATION CHANGES IN PERCEPTIONS OF BEING A SMOKER

Among the 4393 recruits who provided entry and graduation survey data, 41.4% (n = 1819) reported being smokers at entry (that is, reported any smoking in the 30 days before entering RTC). Twenty five per cent (n = 1110) of all women recruits reported being a smoker at graduation, a significant reduction from the 41% smoking rate at entry into RTC (McNemar  $\chi^2 = 665.7$ ,  $p < 0.001$ ). Considering only baseline smokers, approximately 60% of those who had smoked in the 30 days before entering RTC reported they were still smokers at graduation, while 37% considered themselves non/former smokers at graduation. A small percentage (2.3%, n = 42) of entry smokers reported at graduation that they had never smoked. These individuals were infrequent and very light baseline smokers (primarily experimenters) who, by graduation, categorised themselves as "never smokers".

### PREDICTORS OF CHANGES IN PERCEPTIONS OF BEING A SMOKER

Several sociodemographic and entry smoking variables were examined as potential predictors of perceived smoking status at graduation among entry "smokers": age, education, race/ethnicity, type of entry smoker, number of cigarettes typically smoked per day during the 30 days before RTC, typically having the first cigarette of the day only minutes after waking during the 30 days before RTC, and intentions to smoke after leaving RTC. All predictors were included in a stepwise logistic regression to determine the independent correlates of graduation smoking status. As shown in table 2, race/ethnicity, type of smoker, number of cigarettes typically smoked, and intentions to smoke were independently related to smoking status at graduation. Relative to whites, African

Table 2 Independent correlates of perceptions of being a smoker at graduation among Navy recruit women "smokers"\*

| Correlate measured at entry  | Adjusted odds ratio | 95% confidence interval | p     |
|--|---------------------|-------------------------|-------|
| <b>Race/ethnicity</b>  |                     |                         |       |
| White non-Hispanic†  | 1.00                | —                       | —     |
| African American   | 0.54                | 0.35 to 0.84            | 0.005 |
| Hispanic   | 1.01                | 0.73 to 1.46            | 0.975 |
| Asian/Pacific Islander   | 0.60                | 0.31 to 1.15            | 0.120 |
| Native American  | 1.31                | 0.60 to 2.87            | 0.509 |
| <b>Type of entry smoker</b>  |                     |                         |       |
| Experimenter†  | 1.00                | —                       | —     |
| Occasional   | 2.96                | 1.50 to 5.90            | 0.002 |
| Daily  | 7.60                | 3.80 to 15.10           | 0.000 |
| Former   | 4.45                | 1.75 to 11.47           | 0.002 |
| Cigarettes smoked per day during the past 30 days (mean category)‡ | 1.25                | 1.16 to 1.36            | 0.000 |
| Intentions to smoke (mean)§  | 2.57                | 2.20 to 2.99            | 0.000 |

\*Includes ever smokers at entry (n = 1718).

†Reference group.

‡Scale includes 1 (< 1 cigarette on average), 2 (1–5 cigarettes), 3 (6–10 cigarettes), 4 (11–15 cigarettes), 5 (16–20 cigarettes), 6 (21–25 cigarettes), 7 (26–30 cigarettes), 8 (31–35 cigarettes), 9 (36–40 cigarettes), and 10 (> 40 cigarettes).

§Scale includes 1 (definitely no), 2 (probably no), 3 (probably yes), and 4 (definitely yes).

Age, education, and number of minutes after waking one typically had her first cigarette did not enter the model.



Table 3 Independent correlates of smoking relapse at the three month follow up among Navy recruit women "smokers"<sup>\*,†</sup>

| Correlate  | Relapse rate | Adjusted odds ratio | 95% confidence interval | p     |
|--|--------------|---------------------|-------------------------|-------|
| Age  |              |                     |                         |       |
| 17–18 years  | 65           | 2.18                | 0.94 to 5.07            | 0.072 |
| 19–23 years  | 72           | 2.96                | 1.29 to 6.98            | 0.012 |
| 24–35 years <sup>‡</sup>                                       | 54           | 1.00                | —                       | —     |
| Type of entry smoker   |              |                     |                         |       |
| Experimenter <sup>†</sup>                                      | 31           | 1.00                | —                       | —     |
| Occasional   | 66           | 2.58                | 1.28 to 5.23            | 0.009 |
| Daily  | 89           | 5.31                | 2.70 to 11.09           | 0.000 |
| Former   | 52           | 1.40                | 0.45 to 4.38            | 0.553 |
| Intentions to smoke measured at graduation (mean) <sup>‡</sup> | —            | 1.45                | 1.14 to 1.83            | 0.003 |

\*Includes ever smokers at entry (n = 630).

<sup>†</sup>Reference group.

<sup>‡</sup>Scale includes 1 (definitely no), 2 (probably no), 3 (probably yes), and 4 (definitely yes).

Race/ethnicity, education, intentions to smoke measured at entry, number of cigarettes typically smoked, minutes after waking one typically had her first cigarette, and perceptions of being a smoker at graduation did not enter the model.

Americans were significantly less likely to view themselves as smokers at the time of graduation, although Hispanics, Asian/Pacific Islanders, and Native Americans did not differ significantly from whites. Occasional smokers were almost three times more likely, daily smokers were over seven times more likely, and former smokers were over four times more likely than experimenters to perceive themselves as smokers at graduation. Greater number of cigarettes typically smoked and intentions to smoke after leaving RTC were both positively related to perceptions of oneself as a smoker at graduation.

#### RELAPSE AT THE THREE MONTH FOLLOW UP

Slightly over two thirds (n = 724) of "smokers" who responded to the follow up survey had resumed smoking three months after graduation, and 32% (n = 340) reported not smoking. Among past month smokers at entry to RTC, the relapse rate at the three month follow up was 81%.

#### PREDICTORS OF RELAPSE AT THE THREE MONTH FOLLOW UP

Sociodemographic characteristics, entry smoking variables, and graduation smoking variables were used in a multivariate logistic analysis to examine concurrently their association with relapse (yes versus no smoking during the past 30 days) at the three month follow up. Race/ethnicity, education, intentions to smoke after RTC measured at entry, addiction level measured at entry (that is, number of cigarettes typically smoked, and number of minutes after waking one typically had her first cigarette, and perceptions of being a smoker at graduation did not significantly predict relapse in the multivariate model. As table 3 shows, age, type of smoker at entry, and intentions to smoke measured at graduation were associated with smoking relapse three months after leaving RTC. Younger recruits (particularly those aged 19–23 years) had higher relapse rates than their "older" counterparts. Relative to those considering themselves experimenters at entry, the odds of relapse were significantly higher for occasional smokers and particularly daily smokers, although the odds of relapse among former smokers did not differ

significantly from that of experimenters. Daily smokers at entry had the highest relapse rate (89%), while experimenters had the lowest (31%). Those reporting they were occasional or former smokers at entry to RTC were smoking at the three month assessment at rates of 66% and 52%, respectively. Intentions to smoke was the final independent predictor of relapse at the three month follow up: at graduation, those who still had relatively strong intentions to smoke after leaving RTC were more likely to have relapsed than those with weaker intentions.

#### Discussion

As a result of the eight week smoking ban, there was a significant reduction (from about 41% to 25%) in the percentage of all Navy women recruits who perceived themselves as smokers at the end of training. This change in perceptions of smoking status can better be interpreted by comparing it to changes that would have occurred without the eight week ban on smoking. Just before the implementation of the smoking ban during recruit training, Cronan and colleagues conducted a study of the relative effectiveness of several smoking prevention/cessation interventions with male recruits.<sup>28</sup> Control group data from that study provided an estimate of changes in smoking status that one could expect given no smoking ban. Smoking prevalence among this small group of 101 men at entry was 19% and at graduation was 26.7%, a significant increase in the proportion of current smokers (McNemar exact test for correlated proportions, two tailed, p < 0.05). Although the definition of smoking, the sex of the recruits, a 10 year time period, and the geographic location of training differed in the present study and the Cronan *et al* study,<sup>28</sup> the differences in the direction and magnitude of change make a compelling case for the effect of the eight week ban in changing self reports of one's smoking status. However, the differences in the Cronan *et al* study<sup>28</sup> and the present study require that these results be interpreted with caution.

Several variables were found to predict changes in perceptions of being a smoker among those who had smoked in the 30 days just before entering recruit training. Whites, Hispanics, and Native Americans; occasional, former, and particularly daily baseline smokers; those more addicted to smoking based on the number of cigarettes they typically smoked; and greater intentions to smoke after leaving RTC were associated with a persistent view of oneself as a smoker, even after a lengthy period of abstinence.

Among all "smokers" followed, the past 30 day smoking rate three months after leaving recruit training was 68% (or a 32% cessation rate). Among those who had smoked in the 30 days before recruit training, 81% had relapsed at the three month follow up (19% cessation rate). Among daily smokers at entry, 89% had relapsed at the follow up (11% cessation rate). It is possible that these relapse rates are underestimates because of the relatively low response rate to the three month survey and response

bias. To explore this issue, we examined the smoking rates (that is, past 30 day smoking prevalence) at baseline separately for those who responded to the three month survey and those who did not. This comparison allowed us to assess the magnitude of the inflation of the three month smoking rate that might be expected had non-respondents returned the survey. As anticipated from previous research and our own, those who went on to be non-respondents at the three month follow up had a higher smoking rate at baseline than did respondents. In effect, the three month follow up non-respondents increased the overall baseline smoking rate by a factor of 1.8% above the baseline smoking rate for follow up respondents. Thus, although the observed three month follow up smoking rates are likely to be underestimates because of non-response, our analysis suggests the bias is small and that the observed relapse/cessation rates are reliable.

Interpreting these relapse rates is a challenge because identifying an appropriate group with which to compare them is difficult for several reasons. Studies differ in their definitions of smoking and cessation, their data collection time frames, and, most important, their target study group. The present study focused on women experiencing protracted *involuntary* 24 hour a day abstinence from smoking. Ideal comparison data to assess the effects of the eight week ban on subsequent smoking rates would be those from a longitudinal study of a representative sample of military women not exposed to the eight week smoking ban during recruit training. Such a study could provide spontaneous quit rates that naturally occur during the first few months of naval service. Although such an investigation has not been conducted, a study of 682 men entering the Navy in the summer of 1987 before the RTC smoking ban had been implemented found that 6.8% reported having quit one year later.<sup>21</sup> This figure was considered comparable to the 6% spontaneous community quit rate estimated by others.<sup>29</sup> A study conducted after the ban was in place reported a 19% cessation rate in 423 Navy men one year after they graduated from recruit training.<sup>22</sup> The authors concluded that the quit rate among those exposed to the smoking ban was higher than a 6% spontaneous quit rate and comparable to one year quit estimates reported across a variety of more costly cessation interventions.

The impact of the eight week smoking ban can be compared to spontaneous cessation rates among civilians only with caution and appreciation for differences in study populations and settings. Burns and Pierce retrospectively assessed spontaneous cessation activity in Californians.<sup>30</sup> Among adult females (18–65+ years old), 12.5% of those who were smokers one year previously were non-smokers at the time of the interview. Others have reported similar adult cessation rates ranging from 8–10%.<sup>31</sup> Naturally occurring quit rates among young people are generally thought to be as low or lower than adult cessation rates, ranging from 0–11% over a 4–6 month

period.<sup>32–33</sup> For the most part, research has reported low cessation rates for adolescents that range from 3–5%.<sup>31–34</sup>

Smokers undergoing abrupt involuntary worksite smoking bans provide an appropriate comparison for participants in the present study, although worksite bans can only be enforced during working hours. Studies have shown that such worksite restrictions can reduce the level of smoking among employees,<sup>35–42</sup> although positive effects on smoking cessation beyond what would occur naturally have not been consistently demonstrated.<sup>36–38–43</sup> Most investigations of cessation among civilians differ from the present study in one very important aspect—smokers in comparison studies are usually individuals who are motivated to quit smoking.

Taken as a whole, comparisons with smokers in population studies, interventions, and work places with smoking restrictions suggest that the RTC smoking ban was modestly effective in helping smokers quit at a three month follow up. The 11% follow up cessation rate among baseline daily smokers is probably higher than expected had no ban been in place. Thus, restrictions on smoking during recruit training may provide smokers who desire to quit but have been unable to with an external impetus and support to quit. The recruit training smoking ban may have been most effective for casual smokers (that is, experimenters), although appropriate comparison data are not available for these types of smokers. At least one study indicated that smoke free work places are more likely to affect light and infrequent smokers positively than heavier smokers.<sup>44</sup>

One other benefit of the smoking ban during training is the probable effect on prevention of smoking initiation. A study conducted before the ban showed that a substantial number of male recruits who were non-smokers at entry to the Navy began to smoke during recruit training.<sup>21</sup> Unfortunately, the present study was not able to follow up baseline non-smokers, therefore any positive preventive effect cannot be assumed.

Although it is encouraging that at least some recruits did not return to smoking after recruit training, most did relapse. Results from the present study suggest that while recruits stop smoking during training, most are not quitting smoking. Although few settings exist that provide a comparable situation to the eight week total smoking ban at RTC, pregnancy related smoking cessation may provide a similar experience. A large percentage of pregnant women stop smoking during pregnancy, only to relapse postpartum. An estimated 21–30% of smokers stop smoking at some point during their pregnancy,<sup>45–46</sup> yet 63–73% are likely to resume smoking within six months of delivery.<sup>45–47–49</sup> As is the case with pregnant women, recruits may have stopped smoking, but their high relapse rate suggests that they may not have fully prepared or committed themselves to quitting. Like pregnancy, recruit training may be a type of imposed or external motivator that does not require attitude change

or the use of cognitive and behavioural coping strategies that typically help people in their smoking cessation efforts.<sup>50</sup> Once the external motivator is removed (such as birth of the baby or graduation from recruit training), relapse is a likely outcome. Indeed, some believe that exogenous interventions (for example, environmental smoking bans) only provide transient effects without concomitant efforts to enhance people's desire to be healthy.<sup>51</sup>

Reasons for the high rate of return to smoking may be related to recruits' feelings of deprivation and loss of personal freedom during recruit training. Anecdotal reports from female Navy service members recently graduated from recruit training confirm that many recruits look forward to "partying" once they leave recruit training and plan to indulge in behaviours prohibited during that time, although many expect to quit smoking "later". Another explanation may be that the first few months of Navy service after leaving RTC is stressful for some, who may smoke as a potential stress reduction strategy.

Relapse rates varied significantly by age, the type of smoker at entry to recruit training, and intentions to smoke measured towards the end of training. Women who were younger, were a more frequent type of smoker, and still intended to smoke at graduation were more likely to be smoking three months after leaving RTC. Implementing motivational strategies directed at individuals during recruit training could help encourage more "hard core" smokers to change their self image once leaving recruit training. Enforcement of the no-smoking policy within the context of the benefits to individual health and fitness versus restriction of freedom may encourage smokers to make positive changes in perceived smoking status and intentions. In addition, recruit division officers are in a unique position to influence young recruits positively through example. Recruit division officers also could motivate young recruits who look up to them by pointing out that much of the physical addiction is past, by reminding them of the many health related benefits of their continued cessation, and by underscoring the value of being a non-smoker in today's Navy and civilian workforce. In fact, a focus on enhanced employability appears to have provided a salient motivator for young women attending a civilian technical institute after high school.<sup>52</sup> Another unexplored option is to provide pharmacological aid to smokers during recruit training who express an interest in quitting.

### Summary

These results suggest that the impact of the eight week involuntary ban on smoking was useful in providing some smokers with an external impetus to quit. However, high relapse rates, particularly among younger smokers, more regular smokers, and those who at graduation still intend to smoke clearly show that most young female smokers entering the Navy need more than an organisationally mandated smoking ban during recruit training to achieve abstinence from smoking. It is evident

that those in greatest need of cessation—daily smokers—were the least likely to make positive changes in their perceptions of themselves as smokers and to stay quit after having abstained for eight weeks.

These results call into question the effectiveness of a restrictive organisational policy alone in bringing about meaningful changes in smoking behaviour. Others have questioned the application of environmental/organisational policies to address problem behaviours long term without concurrent attitudinal or motivational change.<sup>51</sup> Like most complex health behaviours, smoking cessation is probably more likely to succeed if diverse strategies that encompass both individual level (for example, attitude change) and social/environmental strategies are used.

This research was supported by the Department of Defense Women's Health Research Program (DAMD17-95-5075). The authors gratefully acknowledge the contribution of Suzanne L Hurtado, Linda K Hervig, Shu-Hong Zhu, and John P Elder.

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One of the posters developed by the World Health Organization for the "World No Tobacco Day 2000" campaign.