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Banning Cigarette Smoking on US Navy Submarines: A Case Study

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Abstract

Background—The military has had a long pro-tobacco tradition. Despite official policy discouraging smoking, tobacco still is widely seen as part of military culture. While active smoking has presented a particular challenge for the military, in recent years there also has been increasing concern with secondhand smoke. This is especially true in closed environments and submarines may be deployed for months at a time. The current case study describes the successful implementation by the Navy of a comprehensive ban on smoking aboard submarines.

Methods—The authors searched documents on the Internet, popular media, military-based news outlets, and the scientific literature. We also conducted interviews with Navy officers who were instrumental in policy implementation.

Findings—Data demonstrating substantial exposure of nonsmokers to tobacco smoke aboard submarines had major impact on successful adoption of the policy. A systematic and extended roll out of the ban included establishing a working group, soliciting input and active engagement from submarine personnel, and offering cessation assistance. Support was enlisted from Chief Petty Officers who could have been strongly opposed but who became strong proponents. Fewer problems were encountered than had been expected. In contrast to a previous unsuccessful attempt by a Navy captain to ban smoking on his ship, the ban was adopted without apparent tobacco industry interference.

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Conclusions—Lessons learned included the importance of strong empirical support, effective framing of the issue, setting a realistic timeline, soliciting support from key personnel, and providing appropriate resources. These lessons have implications for those considering further tobacco policy changes in the military and elsewhere.

Keywords

secondhand smoke; public policy; public opinion; cotinine

The military has had a long pro-tobacco tradition¹. This culture began to change as the consequences of tobacco consumption on health and military readiness were increasingly recognized. Until 1975 cigarettes had been included in K rations and C rations². Subsequently, restrictions were placed on allowable smoking areas, promotions targeted directly at Department of Defense (DoD) personnel were prohibited, and Basic Military Training (BMT) became tobacco free in all services³. Although there have been substantial reductions in smoking prevalence among military personnel (from 51% in 1980 to 24.5% in 2011; ⁴), significant challenges remain and tobacco use prevalence in the military continues to exceed that in the civilian population.

Furthermore, initiation continues to be common even for individuals who have never experimented with smoking. Despite official policy, tobacco is still widely seen as part of military culture and smoke breaks, as well as attractive smoking areas, often encourage smoking. Tobacco prices in commissaries and exchanges on military bases, although not as deeply discounted as in the past, still are significantly lower than in civilian outlets. Jahnke and colleagues⁵ found despite current requirements that the price of cigarettes at military exchanges be within 5% of the most competitive commercial price in the local community, prices in military exchanges surveyed were lower than the required minimum.

While active smoking has presented a particular problem for the military, in recent years there has been increasing concern with secondhand smoke exposure⁶. This problem is especially acute in closed environments. Banning smoking on military aircraft even for long flights is a significant restriction. However, this is quite different from the challenge the Navy faces with ships, especially submarines that may be deployed for months at a time.

Despite the known harmfulness of cigarettes and the recognition by the DoD of the deleterious impact of tobacco on health and military readiness, policy initiatives within the military intended to reduce tobacco use have met with substantial industry resistance. Offen and associates⁷ reported on failed attempts by the Navy to limit tobacco use. In 1986, the Navy reported a goal of becoming smoke-free by the year 2000. In 1993, based on reports of the dangers of secondhand smoke, Captain Stanley W. Bryant, the commanding officer of the USS Theodore Roosevelt, announced a ban on smoking aboard the ship starting in July 1993 and proposed eliminating tobacco from the ship's store. These actions elicited a strong and swift tobacco industry response. As described by Offen et al.,⁷ tobacco friendly members of Congress challenged the policies and enough pressure was generated to force the reversal of both the ban on smoking and the prohibition of cigarette sales aboard the ship. This forced a reversal and Congressional interference to provide important lessons for future efforts to implement smoking bans.

In 2010, the Navy successfully implemented a comprehensive smoking ban aboard submarines. Particularly given the past challenges of employing tobacco-limiting policies in the military, smoking bans such as the one on submarines provide an important case example and also lessons learned in implementing policy change that will not be rolled back by the tobacco industry and its allies in Congress.

Methods

We examined internal military documents and research studies related to the submarine smoking ban which were provided by case study informants. For instance, we were provided briefing documents used to promote the policy in the Navy and copies of internal memos and instructions. Through the published literature and with the direction of our military advisors, we conducted interviews with key Navy officers who were involved in the policy implementation and with personnel in the Office of the Secretary of the Navy and the House Armed Services Committee. Our lead informant was Vice Adm. John J. Donnelly, Commander Submarine Force Atlantic, who spearheaded the development and implementation of the ban. In addition, one of the authors of this paper (Michaud) served as Submarine Force Atlantic Surgeon during the same period and was able to provide background on the policy development and implementation.

To examine media reaction to the submarine smoking ban, we conducted searches in Newsbank, Lexis, and Google using the search terms *submarine AND (tobacco OR smok*)* for the time period 1/1/2010 through 3/31/2011. A total of 34 independent media articles were identified that focused on the smoking ban. A content analysis was conducted to extract major themes from the media articles. Two raters trained and experienced in content analysis independently coded each article. The articles were coded to identify major themes regarding positive and negative aspects of and reactions to the ban. The two coders compared the themes they extracted and discrepancies were discussed until consensus was reached.

Findings

Evidence of Secondhand Smoke Exposure

The submarine community had assumed that the high tech atmosphere control equipment (known as “scrubbers”) on submarines removed all contaminants out of the air when the ship was submerged. Therefore, contaminants including secondhand smoke would not have any negative health consequences. Submarines generate their own oxygen and have moved to highly sophisticated technology that chemically absorbs pollutants from the air. However, a submarine officer who was interviewed noted that he had come on a brand new submarine in 1985 and over his tour of duty of 3 ½ years could see a significant yellowing of the interior paint. This was attributed by a number of individuals to the effects of tobacco smoke.

Concerns also were expressed about possible impact of tobacco smoke on electronic equipment. In the context of growing concerns about the impact of secondhand smoke and increasing restrictions on smoking in public places in the civilian environment, the Naval

undersea medical research laboratory approached Naval command with a proposal to do a quantitative analysis of nonsmokers' exposure to secondhand smoke onboard submarines. Prior to the total ban, there had been progressively more stringent restrictions on where smoking was allowed. In the mid 1970s smoking was allowed virtually everywhere; by 2000 there were only two allowable smoking areas—each approximately 6 feet by 6 feet—one in the engine room and one up forward.

According to Admiral Donnelly “The naval undersea medical research laboratory approached the commander with a proposal for a study that would try to get some quantitative analysis of how and what, if any, exposure did nonsmokers get from tobacco smoke.” A study was undertaken to evaluate the effectiveness of the then current smoking policy to protect non-tobacco using crewmembers from secondhand smoke.⁸ Nine submarines were recruited and 634 submariners completed a questionnaire that included demographics, tobacco use status, and pre-deployment exposure to secondhand smoke. Eligible non-tobacco users provided pre- and post-deployment urine samples to be tested for urine cotinine, a validated biomarker of secondhand smoke. Results indicated that deployment cotinine levels were 2.1 times higher than pre-deployment levels, a highly significant difference. The investigators concluded that the existing policy did not protect nonsmokers on submarines from involuntary exposure to secondhand smoke and that prohibition of smoking onboard submarines would be an effective means of achieving this objective.⁸

Moving Forward with the Ban

According to our informants, the results of the secondhand smoke study presented a compelling case for prohibiting smoking aboard submarines in order to protect nonsmokers from secondhand exposure. Although there was widespread belief among those in positions of authority that Naval personnel had the “right” to use tobacco, there also was the belief that they did not have the right to harm their fellow sailors' health. The intention of the proposed ban on smoking therefore was not to protect smokers from themselves, but rather to protect those who were being involuntarily exposed. Thus, although there was discussion of a total ban on use of tobacco products, such a ban was not supported by senior leadership. Admiral Donnelly commented “It was always assumed that the air on the submarine was purer than the air you'd breathe normally ashore...There was a growing concern about secondhand smoke and several times there were attempts to extinguish the smoking lamp...” He said that the data showing high levels of secondhand smoke exposure⁸ provided “a compelling case that we should extinguish the smoking lamp to protect nonsmokers.”

As important as the empirical data were to the decision to ban cigarette smoking, the systematic approach to implementing the ban, including briefing of the Chief of Naval Operations and the Secretary of the Navy, the extended roll out, and the provision of cessation assistance and support were equally important. In 2009, a working group was established to prepare for a December 31, 2010 deadline for prohibiting smoking below decks on deployed submarines. From the outset, emphasis was placed on the point that senior leadership recognized the “right” to use tobacco products, but also the right of nonsmokers not to be harmed by secondhand smoke exposure. According to Admiral

Donnelly “We realized that this was going to be quite an emotional issue...it had been tried before and failed. One carrier's Commanding Officer [CO] tried to put the smoking lamp out on his carrier and a very strong lobby group from North Carolina and Virginia weighed in with their elected representatives in Washington who then weighed in with the Secretary of the Navy and the CO of that carrier was told to rescind his policy.”

There were concerns about resistance from submarine personnel, especially given the very high prevalence of smoking among submariners.⁹ Smoke breaks were viewed as a significant reward for smokers. An initial outcry came from those who maintained that their basic rights were being violated. A lobbying group that included retired submariners, both officers and enlisted, raised strong objections. Adding to the challenge was the fact that Chief Petty Officers, who would be instrumental for translating policy into action, had the highest percentage of smokers of any category.

Despite these concerns, Navy leaders moved the policy forward. Some of those charged with implementation expressed a desire to ban all smoking immediately. However, Navy leadership recognized that an immediate forced ban would lead to substantial resistance. The decision was made to approach the Chief Petty Officers as leaders who would be critical to the success of the policy. There had been concern that given their especially high smoking prevalence, Chief Petty Officers could be major roadblocks to successful implementation. Admiral Donnelly noted “And you always have to go to the middle management layer which is the Chief Petty Officer community that translates the policy into action.” The Master Chief Petty Officer of the US Navy was enlisted to make the case and this individual was an exceptionally effective leader. He was briefed on the cotinine exposure findings and also on data noting lifetime risk of death from a number of activities including falling, death by fire and drowning, and motor vehicle accidents. The information presented noted that the likelihood of dying from secondhand smoke exposure was comparable to that from motor vehicle accidents and substantially greater than from falling or from death by fire and drowning combined.

The Master Chief presented the exposure data and the case for the ban and asked the Chief Petty Officers for their support. He noted that successful adoption of the policy would pose a significant challenge. He underscored the critical role they played in the submarine force. This approach proved quite successful. The Chief Petty Officers not only supported the policy; many quit smoking, viewing themselves as role models for others. Admiral Donnelly: “He appealed to their pride, that we recognize we could not do it without them, that they were going to have to be the role models in this and they really stepped up.”

The policy was announced well in advance of the December 31, 2010 deadline. Cessation assistance was offered to those who wished to quit including smokeless tobacco users as well as smokers. Ship captains had discretion over the actual date of implementation and could impose the ban prior to December. However, they were required to allow sufficient time for interested personnel to complete a cessation program prior to the ban. All submarines were allocated nicotine patch and gum at a total cost of \$500,000. In addition, a minimum of two individuals per submarine were trained as tobacco cessation facilitators. The American Cancer Society Fresh Start program was offered. Resources provided to

trainers included a train the trainer CD, Navy tobacco cessation facilitator basics CD, written training materials for new facilitators, and tobacco cessation resources for operational forces available at <http://www.nmcphc.med.navy.mil/burned/tcat/CD/index.htm>. In addition, a new CD was developed “Want to Quit Tobacco.” Both individual and group counseling were made available. Other treatment options were described including state quit lines and web-based cessation programs.

Our interviews and media coverage indicated that the ban was implemented with fewer problems than expected. Once the ban went into effect there appeared to be general acceptance among submarine personnel and few instances of violations. Some individuals abstained when the ship got underway and then started again as soon as the ship came into port. Others, however, used this opportunity to quit smoking entirely and reported significant health benefits. According to Admiral Donnelly, many individuals commented that they had tried numerous times to quit on their own, but it was not until they had a mandate from their employer to refrain from smoking on board that they had the impetus they needed to quit permanently. Admiral Donnelly noted that “Every ship got two people trained [for smoking cessation] and we went out and spent \$500,000 to buy nicotine replacement therapy medications and we distributed these medications throughout the force...many individuals reported the significant health benefits from finally kicking the habit and a lot of the sailors said that they had tried many, many, many times to quit on their own but it wasn't until they had a mandate from their employer...that was the incentive that they really needed.”

Defusing Opposition

We have been unable to find any evidence of push back from Congress against the ban. There was nothing in the tobacco industry documents that we reviewed, in the media coverage, or in key informant interviews. According to Admiral Donnelly “The first thing we did was take these study results up my chain of command to the Chief of Naval Operations and the Secretary of the Navy, they're very compelling results and what we told them is that we recognized everybody's right to use tobacco products, but we also recognize the nonsmokers' right to not have any adverse health effects from that use.” A source interviewed in the Office of the Secretary of the Navy commented on the fact that the ban was well thought out and had strong research evidence in support. She indicated that the Secretary of the Navy briefed Congress and that there was very little push back. She noted that the Secretary felt very strongly and emphasized the fitness of the force and impact of fitness on ability to perform the job. She concluded that for all of the concerns originally expressed, in 2010 the smoking lamp went out and this is now a nonissue. A staffer with the House Armed Services Committee also recalled no opposition to the ban from Congress.

Media Response

The ban received considerable media coverage both when initially proposed and after it went into effect. This coverage consisted of newspaper articles in sources targeted to the Navy (e.g. *Navy Times*), the broader military (e.g. *Stars and Stripes*), and in newspapers with wide public circulation including the *New York Times*. Table 1 presents themes extracted from the 34 articles identified for the submarine ban. The articles primarily noted

the positive impact of the smoking ban, including reduced healthcare and personal financial costs, the elimination of a proven risk factor for disease, increased productivity, and the fact that implementation of the ban was generally well received. In addition, many articles noted the assistance the Navy was providing for smokers to prepare for the ban. For instance, a *New York Times* article¹⁰ noted that the ban did not require submariners to quit cold turkey, but allowed them significant time before the ban went into effect. A *Navy Times* article¹¹ cited the cessation programs intended to assist smokers who were interested in quitting and the fact that smokeless tobacco was not banned (although the submarine force is strongly discouraging its use as a means to quit smoking). There was some speculation in the media, both before and after the ban went into effect, that the response from submariners would be negative. One article in *Stars and Stripes* reported that, for a number of submariners, the first few days of the ban were quite challenging including “anger management issues” but goes on to say that the “initial prickliness soon went away”.¹²

Negative themes focused primarily on factors which researchers have previously identified as myths which have been promoted by the tobacco industry.^{1,13–17} For instance, although implementation of the smoking ban was criticized as eliminating an important source of stress relief and a “creature comfort,” research within the military has demonstrated that smokers suffer from significantly greater personal and occupational stress than either never- or ex-smokers and they have an increased risk of mental health disorders.^{18–21} Similarly, given that a large majority of Navy officers and senior enlisted personnel do not smoke, it is not clear how “smoke pits” are critical to the transmission of mission essential information.⁴

Despite some negative press, the general consensus in both publications and from interviews conducted for the present study was that the ban was positively received, with several submarines successfully implementing the policy ahead of the scheduled date. Just prior to the official start of the ban, *The Virginian Pilot*²² published an article about the concerns related to the smoking ban but reported on responses from the crew of the Norfolk-based Albany submarine that the implementation was not as difficult as expected and that, despite concerns that tobacco withdrawal would negatively affect morale, people seemed “nicer” and “less stressed out” overall. Another article published by *Stars and Stripes*¹² two months post-ban noted that “Non-smokers aboard said that none of their co-workers changed for the worse after quitting.” Overall, concerns voiced prior to the policy implementation that the ban would have a negative effect on submariners turned out to be unfounded.

Conclusions

A previous attempt by a Navy Captain to ban smoking on his ship met with strong resistance and resulted in a successful intervention by the tobacco industry and its allies in Congress to reverse the policy.⁷ The current comprehensive ban on smoking aboard submarines, in contrast, was adopted without industry interference of which we are aware. There are important lessons to be learned from this successful case example.

Strong Empirical Support and Measured Outcomes

A critical factor was the systematic collection of empirical data clearly demonstrating high levels of exposure of nonsmoking submarine personnel despite highly sophisticated

scrubbing equipment.⁸ Although substantial data on secondhand smoke already existed in the literature, occupation-specific data were critical in generating support for the ban. Data on the direct and indirect negative health consequences of tobacco use for service members are necessary in building an effective case for limiting tobacco.

Effectively Framing the Issue

The “right” of smokers to use tobacco is regularly cited as a reason to limit military tobacco control policies. In the instance of a submarine ban on tobacco, policy was not implemented to impede the rights of smokers but rather focused on the rights of non-smokers to avoid secondhand smoke exposure. Thus, it was made clear that the primary purpose of the policy was to protect the rights of non-smokers and not to force smokers to quit. However, for those smokers who were interested in quitting, cessation services including counseling support and nicotine replacement were made readily available.

Setting a Realistic Timeline

The roll out of the ban occurred over several months, thereby allowing time to build support and providing submarine personnel ample notice. Allowing a reasonable amount of time prior to the implementation was key in both acceptance and planning for the ban by those affected.

Support from Key Personnel

Perhaps especially noteworthy was the active enlistment of support from key personnel, the Chief Petty Officers, who had very high rates of smoking. Educating key opinion leaders about the rationale and plan for ban implementation helped facilitate the transition.

Briefing the Chain of Command

Rather than a unilateral decision at the individual submarine level, the current ban was implemented from the highest ranks, which assisted in its successful implementation. Providing comprehensive briefings to the higher levels of leadership within the Navy and securing support proved a useful tool in circumventing challenges.

Providing Appropriate Resources

In planning for the ban, potential challenges such as cessation among current smokers were considered and appropriately addressed. The Navy provided comprehensive and timely resources for those interested in quitting which appeared to improve acceptability.

Strength and Limitations of the Case Study

A strength of this case study was the participation of Capt. Michaud both as informant for and coauthor of this article. He was the Submarine Force Atlantic Surgeon at the time of the development and implementation of the smoking ban and has lent his unique insights and editorial guidance. In addition, Vice Admiral Donnelly, who provided senior leadership for the adoption of the policy, provided interviews and background material which allowed us to chronicle “behind the scenes” events which led to adoption of the ban. A weakness was our inability to interview other active duty Navy personnel involved in the process,

including the Master Chief and the Chief Petty Officers due to the difficulty of locating and securing permission to interview active duty Navy personnel.

Overall, the policy was implemented with few glitches and appears to have gained widespread (if sometimes grudging) acceptance. Thus this case study demonstrates that major policy change restricting tobacco use is possible even in the context of an historically tobacco friendly military. With a strong case including supporting data and systematic roll out, potential interference from the tobacco industry and their allies in Congress appears to have been neutralized in advance. The successful ban of smoking on submarines provides important lessons for those considering further tobacco policy changes in the military and elsewhere.

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What this paper adds

This case study describes the successful implementation of a ban on smoking aboard Navy submarines. It provides a model demonstration of how to effectively institute such military tobacco policy and how to minimize resistance and mobilize support from key stakeholders. The study illustrates the potential importance of empirical data to policy adoption. Systematic roll out with a realistic timeline, support from key personnel, and briefing the chain of command was critical especially given potential tobacco industry interference.

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Table 1
Major Themes from Media Articles for the Submarine Smoking Ban

Major Themes	
Positive Media Reaction to Smoking Ban	Negative Media Reaction to Smoking Ban
<ul style="list-style-type: none"> • Smoking ban will protect the health of the force • Saves money in tobacco-related health care costs • Protects nonsmokers from second hand smoke • Study found unacceptable levels of carcinogens in air – the scrubbers did not work • Ban will encourage some smokers to quit • Implementation of the ban went better than expected • Typically there were long waiting lines for the “smoke pit” • There will be more room for storage (some smokers used up to 1/3 of locker space for cigarettes) • The ban will lower costs to smokers • There is strong peer support in the Navy for smoking cessation • Smokers were overall less “grumpy” and stressed after the ban • The ban simplified rules about smoking which varied across submarines • Some submarines gradually reduced smoking breaks before fully implementing the ban to help smokers to quit 	<ul style="list-style-type: none"> • Smoking helps manage stress • The ban is “irritating” and requires smokers to stock up on nicotine replacement products • It is hard to quit smoking • Submariners cannot use some cessation medications (e.g., Zyban, Chantix) • “Smoke pits” are an important mechanism for dissemination of information • Some smokers will gain weight when they quit • Smokers will switch to chewing tobacco • The ban eliminates one of the few “creature comforts” available to submariners • Given women were recently allowed on submarines, implementing a smoking ban is too much change during one time period • The ban breaks with a long established tradition of smoking in the submarine force • The ban may negatively impact retention