

## Commentary

# Dealing with the Cigarette Menace - A Cardiologist's Perspective

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It has been over 50 years since the initial Surgeon General's report was published concerning the higher risk of lung, laryngeal cancer and bronchitis in cigarette smokers and yet we are still, over 50 years later, trying to convince our patients not to smoke. In spite of all the data linking active or passive cigarette smoke exposure with a myriad of health issues including a higher incidence of multiple types of cancer, COPD and cardiovascular disease, nearly 1/5 of the United States population and a higher percentage in Eastern Europe and Asia continue to smoke cigarettes on a daily basis. Why is this so? For lifelong non-smokers, there is great difficulty in understanding the pleasures of smoking but for most, it fulfills some need whether or not the individual is physically or psychologically nicotine-dependent.

Cigarettes are also easy to come by for the right price, and even while they are no longer advertised, they are all around us. Our children are introduced to cigarettes at an early age through family or peer exposure and consumption in this age group continues to increase. Although tobacco companies cannot advertise traditional cigarettes, they spend billions yearly on marketing mainly related to discounting the price of cigarettes to retailers [1]. Electronic cigarette use is also on the increase and it has become a profitable substitute for the tobacco companies and a possible gateway to the use of active cigarette smoking later in life. While the long term cardiac effects of electronic cigarettes are unknown, it cannot be healthy for an adolescent to initiate any form of a nicotine habit. The tobacco companies continue to profit greatly while the medical costs and lost wages related to cigarette exposure remain astronomical. It is estimated that the health cost of smoking is at least 170 billion dollars per year [2]. In 2014, according to Reuters, for every \$10 spent on healthcare in the U.S., almost 90 cents was due to smoking [3].

Let us look more closely at some of these data. For cardiologists, the data linking cigarette exposure with cardiovascular data are as striking and irrefutable as they are for a cancer link. Over 450,000 deaths annually in the USA are caused by tobacco and at least 1/3 is related to coronary artery disease. While the death rate related to cigarettes in the USA has decreased somewhat recently, tobacco remains the leading external cause of mortality in the USA far exceeding the mortality related to illicit or improper use of drugs, firearms, traffic accidents etc [4].

- Approximately 17 to 18 % of adults smoke while current

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Submitted: 20 October 2017

Accepted: 11 November 2017

Published: 13 November 2017

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ISSN: 2573-1270

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or recent smoking was present in 44% of patients presenting with ST elevation myocardial infarction undergoing primary percutaneous intervention to open the infarct vessel (National Cardiovascular Registry, n=93,229) [5].

- Reductions in coronary disease mortality of over 50% in some studies are attributable to smoking cessation [6].
- Public smoking bans in 2 cities in the USA (Helena, Montana and Pueblo, Colorado) [7,8] as well as similar data from Canada and Europe significantly decreased the incidence of heart attack. Cigarette smoking is very pro-thrombotic related to multiple mechanisms including endothelial dysfunction, heightened platelet reactivity, increased fibrinogen levels and white blood cell counts and reduced endogenous fibrinolysis [9]. Abstinence produces an exponential reduction in thrombotic events such as myocardial infarction after a few months of zero exposure [10].
- Even smoking a few cigarettes/day or the passive exposure of individuals to cigarette smoke significantly increased cardiovascular mortality [11].
- Other than coronary artery disease, cigarette smoking significantly increases the incidence of atherosclerosis, stroke, aneurysm formation, peripheral vascular disease, pulmonary embolization and atrial fibrillation as compared to non-smokers [12]. Not only is mortality increased, but quality of life is seriously affected through several mechanisms including increased hospitalizations, reduced mobility, lost wages etc.
- It is estimated that over 8 million lives have been saved in the USA since the 1964 Surgeon General's report by reducing the percentage of cigarette smokers [13].
- Considering the worldwide use of cigarettes and its effect on all-cause mortality, about 1 billion individuals smoke and if current smoking patterns persist, tobacco will kill nearly 1 billion people this century, mostly in low and middle-income countries [14].

Is there an easy solution? Of course, the answer is no for

several reasons including its wide spread use, the pleasures and physical dependency of smoking, an individual's right to smoke, the power of big tobacco etc. What is the answer? On a global level, this requires an international solution and perhaps an organization such as the United Nations should become more involved and convene a global conference to address the issues. The World Health Organization Framework Convention on Tobacco Control supported by 180 countries has implemented strong evidenced-based policies to reduce cigarette consumption such as warning labels, smoke-free public spaces, comprehensive advertising bans and high cigarette taxes. While they have made a small dent in many countries in reducing consumption, much more needs to be done [15].

In the USA, likewise, there is no simple solution since smoking continues to be very prevalent although there have been decreases in use over the last decade with the implementation of the above policies. In individuals who smoke and have established disease, the American Heart Association has advocated a 5 step process to aid the smoker in quitting [16]. Nevertheless, the long term success with or without medication of smoking cessation in a chronic, nicotine- dependent individual remains suboptimal [17].

How do we reduce consumption in succeeding generations and in some of those adults who are presently not physiologically nicotine dependent? Our schools continue to educate students on the dangers of smoking and the media advertises to the public but this is not sufficient to eliminate the threat. We have favored a more draconian method in addition to the above policies. Our solution would require federal legislation. Unfortunately, this would likely be very difficult to pass through a Republican Congress. It is based on the cigarette tax. Between the 1980's and 2011, cigarette prices in the USA have increased 283%, reducing sales by more than 50% to 14 million packs sold in 2011 [18]. Making cigarettes economically unaffordable over time across the nation with significantly higher taxes than presently are levied should persuade many including the adolescent from embarking on such an expensive habit [19,20]. The money generated from the senew taxes would be used either for support of smoking cessation clinics which are presently too few and underfunded or funneled into primary and secondary schools for more tobacco prevention programs. Additional legislation will also be needed to regulate electronic cigarettes as well. This solution is, of course, controversial and not ideal. Not only will it be met with opposition, but it also would likely result in increased criminal activity in some ways similar to what happened during prohibition in the 1920's in the USA. However, the scourge of tobacco-related cancer, heart and lung disease is a man-made epidemic and it must be finally controlled.

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### Cite this article

Ambrose JA, Kisra S (2017) Dealing with the Cigarette Menace - A Cardiologist's Perspective. *JSM Atheroscler* 2(4): 1039.