

The Atlantic

The Nicotine Fix

America's cigarette addiction may seem to be mostly over. But low-income Americans continue to smoke—and die—at alarming rates. A radical new strategy could help them quit once and for all.

By Kenneth E. Warner and Harold A. Pollack

NOVEMBER 13, 2014

*A custome lothsome to the eye, hatefull to the Nose,
harmefull to the braine, dangerous to the Lungs, and in the
blacke stinking fume thereof, neerest resembling the
horrible Stigian smoke of the pit that is bottomelesse.*

—King James I, *A Counterblaste to Tobacco*, 1604



The Harm Reductionists: An Alternative to “Quit or Die”

Harm reduction is simple in concept but controversial in practice. Instead of eliminating a given risky behavior, proponents of this idea seek to reduce the dangers involved—often by substituting a closely related, less-dangerous behavior. Examples abound: Offer chronic heroin users clean needles and methadone treatments. Instead of requiring abstinence-only education, teach students about birth control and, in some school jurisdictions, provide free condoms.

We know from research that many of these approaches work. Provision of clean needles has markedly slowed the spread of HIV in many nations. The designated driver campaign, perhaps the most successful contemporary use of harm reduction, has substantially reduced traffic fatalities by addressing drunk driving rather than alcohol consumption itself.

Some cigarette smokers very much want to quit, often desperately so, but simply find complete deprivation intolerable. Enter tobacco harm reduction (THR), the idea that some smokers can wean themselves off cigarettes—by far the most dangerous form of tobacco consumption—by switching to alternative nicotine or tobacco products.

Many anti-smoking advocates view such approaches with extreme skepticism. The two most prominent “harm reduction” efforts—created by the tobacco industry itself—caused tremendous harm.

The first was the filtered cigarette, which accounted for just 1 percent of all cigarette sales in 1950. That was the year the first scientifically robust study identified smoking as a cause of lung cancer. When these findings were publicized in the media—most notably in a December 1952 *Reader's Digest* article entitled “Cancer by the Carton”—the first widespread smoking-and-cancer scare enveloped the nation. Smoking rates plummeted for two years as people scrambled to quit.

The industry responded by producing and heavily advertising filtered cigarettes, claiming that they let the flavor through while trapping the

“bad stuff.” (The industry never specifically admitted that smoking caused lung cancer, or any other disease.) Kent, the first successful brand of filter-tipped cigarettes, was promoted as “the one cigarette that can show you proof of greater health protection.” It utilized an “exclusive Micronite Filter” that, ironically, was made of crocidolite asbestos.



To 1 out of every 3 cigarette smokers:

Kent-the one cigarette that can show you proof of greater health protection



Every week, millions see convincing evidence that KENT'S "Micronite" Filter is the cigarette filter that really works—giving true smoking pleasure, yet removing up to 7 times more nicotine and tar than other filter cigarettes.

If—like 1 out of every 3 smokers—you're sensitive to the tar and nicotine in tobacco, you want more than just a promise that a filter-tip cigarette will give you the health protection you need.

And KENT is the one cigarette that gives you more than a promise. Every week, on television and in store demonstrations—the effectiveness of KENT'S Micronite Filter is tested before your very eyes... tested against other filter-tip brands selected at random from packages brought at retail.

The pictures shown here are action shots of one of these tests—as performed by Jonathan Blake, your host on the exciting TV show *The Fix*.



1. Everything equal. Two equal glass beakers with tubes through which tar and nicotine are placed on a white sheet of plain white paper. Jonathan Blake explains that you also will be used to test the results of the test of KENT'S tobacco plus will test the smoke of another filter-tipped cigarette.



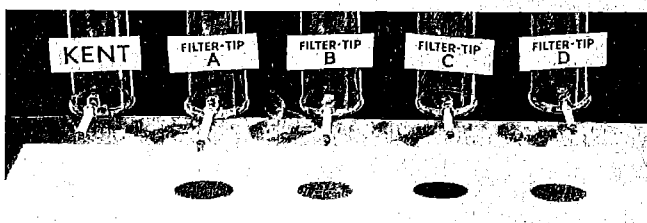
2. Millions watch him. Blake draws smoke from the KENT into one glass, and from brand X into the other. Notice that the smoke does not enter the beaker. It is drawn into the glass exactly as it comes through the filter of the cigarette—exactly as it would enter your mouth if you were smoking!



3. Time is checked. Two glasses a few minutes for the nicotine and tar particles in the smoke to settle on the white paper. KENT'S Micronite Filter draws from all filter cigarette filters, but it's much—up to 7 times—more paper, cotton or cellulose filter paper—than from a cigarette that has been used to puff it in a single puff.



4. And here's your answer. When the glasses are lifted, just eyes see a much stain from brand X in the middle of brand X, exactly a trace from the smoke of the KENT! The difference in the test clearly shows the difference in the health protection you get from a KENT'S as compared to the filter-tip brand you may now be smoking!



5. Against all odds. Here are the results of the same test performed in a laboratory. Compare how KENT'S filter tip affects tar and nicotine compared with four other brands of filter-tip cigarettes. Again, the difference in the paper of the test clearly shows the difference between KENT and other filter-tip cigarettes. Remember that, when you smoke, the tar and nicotine that have entered the glass are drawn into your system. Here is further visual evidence that KENT'S Micronite Filter takes out up to 7 times more nicotine and tar than other filter cigarettes. Here is proof that KENT offers you the greatest health protection in cigarette smoking. Why don't you start smoking KENT'S today?

Kent

with exclusive MICRONITE Filter

full smoking pleasure... plus proof of the greatest health protection ever

A 1955 Kent ad promises “greater health protection” through the cigarette’s asbestos filter. (Legacy Tobacco Documents Library/UCSF)

Industry documents, subsequently made public as a result of tobacco lawsuits, reveal that the industry never truly viewed filtered cigarettes as less dangerous than unfiltered cigarettes. Rather, it viewed the filtered cigarette as a means of assuaging the public’s fears. Still, many people fell for the sales pitch, desperately seeking reassurance that it was okay to smoke. Smoking resumed its upward trajectory in 1955, and by 1960, filtered cigarettes dominated the market.

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A second public scare in the late 1960s and

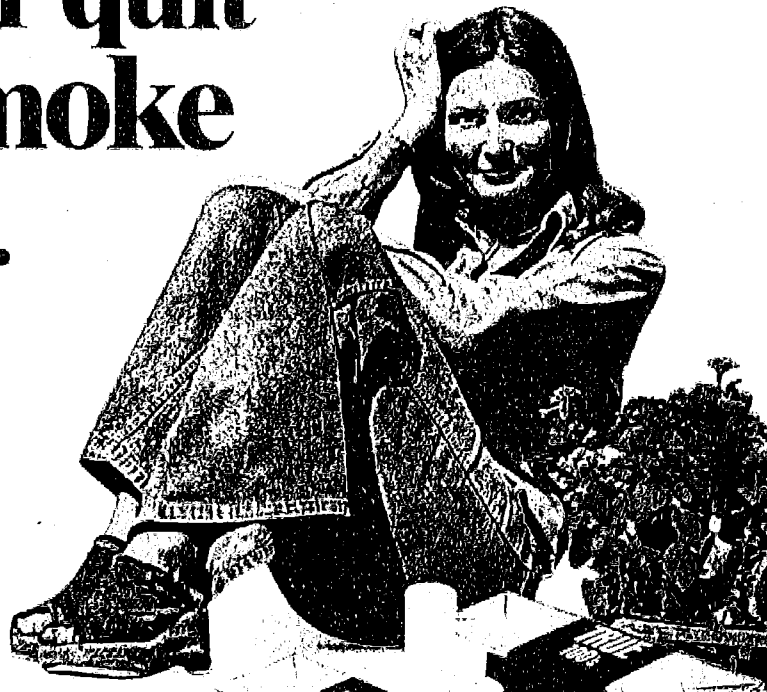
early 1970s generated another industry innovation. After millions of people became concerned about the widely publicized toxicity of tar and nicotine (often conjoined in the public's mind), cigarette companies introduced a wide variety of low-tar-and-nicotine (low t/n) cigarettes. The design of these cigarettes was brilliant. One of the most common features involved a ring of tiny perforations around the filter tip. The government's cigarette testing machines, intended to assess tar and nicotine yields, held cigarettes at the very tip end and puffed on them with a constant force at regular intervals. When the machine "inhaled," the perforations allowed air to enter the cigarette, thereby diluting its yields of tar and nicotine. The government's widely reported measures showed often very large reductions in emissions.

People did not smoke like the machines, however, and the industry knew it. Smokers held the cigarette in the middle of the filter tip, thereby occluding half of the ventilation holes. Smokers with large lips, referred to in the trade as "congenital hole-blockers," might cover 100 percent of the perforations. For flesh-and-blood smokers, tar and nicotine yields were considerably higher than those recorded by the government's testing machines.

Once again, industry documents show that low t/n cigarettes were public relations devices, designed from the beginning to allay the public's fears. One prominent 1975 ad for True cigarettes shows a woman reflecting, "I thought about all I'd read and said to myself, either quit or smoke True. I smoke True." These ads worked fabulously: Millions of Americans switched to low t/n cigarettes, many likely in lieu of quitting.

© Lorillard 1975

**I thought
about all I'd read
and said to myself,
either quit
or smoke
True.**



**I smoke
True.**

King Regular: 11 mg. "tar", 0.6 mg. nicotine, 100's Regular: 13 mg.
"tar", 0.7 mg. nicotine, av. per cigarette, FTC Report April '75.

Warning: The Surgeon General Has Determined
That Cigarette Smoking Is Dangerous to Your Health.

The low tar, low nicotine cigarette. Think about it.

A 1975 ad promotes True as the cigarette of choice for thoughtful, health-conscious smokers. (Legacy Tobacco Documents Library/UCSF)

Most smokers found the low t/n product less satisfying than full-strength

cigarettes. Struggling to get their accustomed levels of nicotine, low t/n smokers engaged in all kinds of compensatory behaviors, puffing harder or more frequently on their cigarettes, smoking them closer to the butt, and smoking more of them.

In a 1983 study, levels of cotinine, a derivative of nicotine, in smokers' blood showed little to no correlation with the machine-measured nicotine yields. Smokers of low t/n cigarettes displayed lung cancer rates similar to those among people who smoked regular-yield cigarettes. The only real difference was that low t/n smokers developed cancers further down into the lung, apparently as a result of drawing harder on their cigarettes.

Thus, the two most successful entrants into the "harm reduction" market were not harm-reducing at all. Quite the opposite: They offered an attractive way to continue smoking to millions of frightened smokers who otherwise might have quit.

In the 1980s, R.J. Reynolds did attempt to market an apparently genuine lower-risk alternative to cigarettes, investing hundreds of millions of dollars in a product called Premier. Designed to look like a cigarette on the outside, Premier really was tobacco rocket science for its era. Small beads impregnated with nicotine were enclosed in an aluminum capsule inside the rod of the device. When the user lit the carbon tip with a cigarette lighter (because a match didn't burn hot enough to ignite it) and sucked on the "filter tip" end, the heat evaporated the nicotine on the beads, allowing the user to inhale nicotine and glycerine.

The aluminum capsule was held in place by tobacco, even though no tobacco was actually consumed. The patent, which described the product as a nicotine-delivery device, noted that the tobacco in the product was optional; the capsule could have been held in place by any number of other means. Apparently the purpose of including the tobacco was legal: The device looked like a cigarette on the outside and included tobacco inside; therefore, the industry could argue that it was a cigarette (even if it wasn't) and should thus be exempt from the usual FDA drug delivery device

regulations.

Introducing Premier

Somewhere along the line, a personal pleasure became a public debate. Over the smoke you inhale, the smoke you exhale, even the smoke coming off the lit end of your cigarette. While we've long taken issue with the allegations



against smoking, what concerns smokers has to concern us. And that's why we created Premier, the remarkable new cigarette that offers you a genuine alternative.

SCIENCE REVOLUTIONIZES SMOKING.

Unlike any cigarette that came before, Premier's tobacco is *beated*, not *burned*.

It's a breakthrough that makes Premier cleaner than any other cigarette.

Premier eliminates or greatly reduces a majority of the compounds produced by burning tobacco, not only in the smoke around you, but also in the smoke you inhale. Some compounds do remain, including nicotine and carbon monoxide, but at levels comparable to leading "lights" cigarettes.

YOU WON'T MISS WHAT'S MISSING.

A 1988 ad introduces Premier as "a cleaner way to smoke." (Legacy Tobacco Documents Library/UCSF)

Premier failed to impress consumers when RJR test-marketed it in 1988. Six years later, RJR test-marketed a similar product called Eclipse, which used a simpler system designed to generate a more pleasing taste and

smell. That failed, too.

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Despite this unpromising history, the current generation of THR products may be different, and more beneficial. For one thing, many modern products were developed not by the cigarette industry but by entrepreneurs seeking to compete with the industry. Until recently, those alternatives consisted primarily of pharmaceutical nicotine products (used on a long-term basis, not merely as a short-term aid to quitting) and an assortment of smokeless tobacco products. Many of these products likely served as an effective harm-reduction for a subset of nicotine consumers who otherwise would have continued smoking. At times, health authorities have overstated the dangers of smokeless tobacco. For example, the federal government frequently told the public, “Smokeless tobacco is not a safe alternative to cigarettes.”

It’s true that smokeless tobacco is not entirely safe, but even products high in nitrosamines—an element believed to be highly carcinogenic—present a much lower risk than smoking. In the case of newer low-nitrosamine smokeless products, research suggests that the risk is no more than 10 percent that of cigarette smoking, and possibly much less. If smokers substituted one of these products for cigarettes—assuming they would not quit otherwise—their health gain would be immense.

The problem is that these products may sustain cigarette use among people who would otherwise quit. This concern has intensified with the new-found popularity of electronic cigarettes, commonly known as e-cigarettes, and other ENDS (electronic nicotine delivery systems). A prominent Wall Street analyst believes that e-cigarettes will constitute half of the cigarette/e-cigarette market in less than a decade. Some Harm Reductionists appear to believe that e-cigs are *the* solution to America’s

cigarette problem. Unlike Premier or Eclipse, many brands of e-cigarettes are marketed by companies that have no ties to the tobacco industry and, in fact, openly seek to undermine it. One major brand, NJOY, has the stated mission “to obsolete cigarettes.”

E-cigarettes are not cigarettes at all. Rather, they are (mostly, not all) cigarette-shaped devices that use batteries to heat a liquid mixture containing nicotine and propylene glycol, which creates the smoke-like vapor upon exhaling. Users—known colloquially as “vapers”—suck on the device and draw in vaporized nicotine, along with selected flavorings and often a few additional chemicals.

In this 2014 commercial, Jenny McCarthy tells viewers, “Blu e-cigs have been an absolute savior for me!”

Users often believe they are inhaling nicotine into their lungs, as with conventional cigarettes. In fact, only a subset of e-cigarettes deliver significant amounts of nicotine to the lung. Many merely deposit nicotine on the linings of the mouth and throat, creating a slow absorption into the bloodstream, not unlike other smokeless tobacco products, and nicotine gum. This slow absorption delivers less nicotine “kick”; hence, many e-cigarettes are less addictive than cigarettes. But they’re not non-addicting.

The most pressing concern about e-cigarettes and other THR products is that smokers will use them to tide themselves over during periods when they can't smoke, for example while they're at work. By sustaining their nicotine blood levels, the products will actually keep their addiction going, and they'll continue to use cigarettes the rest of the day. Were the alternative products not available, the argument goes, these smokers would be more likely to quit altogether. Research has established, for instance, that smoke-free workplace policies increase quitting.

Critics of THR worry about other possibilities, too. Using smokeless products might cause former smokers to relapse. Kids who avoid cigarettes might experiment with e-cigarettes, quite possibly eventually moving on to cigarettes to get a bigger kick. What's more, the new "safer" smokeless products may not be safe. The public health community is divided on this question: Many (though few with specific THR expertise) believe that smokeless products are so dangerous in and of themselves that encouraging their use in lieu of cigarette smoking would be akin to encouraging people to consume arsenic instead of hydrogen cyanide (each of which, incidentally, is present in cigarette smoke). The problem here is a lack of definitive evidence. So far, the research hasn't given any clear indication whether using these alternative products will increase or decrease the net population harm associated with cigarette use. Our own risk-calculus leans in the direction of supporting harm reduction.

Consider a striking natural experiment in Sweden. For several decades, a sizable proportion of the Swedish male population has been using snus, a moist tobacco powder with relatively low nitrosamine levels. Sweden also has the lowest rate of male cigarette smoking in Europe, likely due to the country's heavy taxation of cigarettes and its low taxation of snus. And Sweden boasts Europe's lowest male lung cancer death rate—as well as the lowest male death rate from smoking-related cardiovascular diseases, and the lowest male death rate from other cancers that are attributable to tobacco. For men between the ages of 60 to 69—a prime time for smoking-related deaths—the tobacco-attributable death rate in Sweden is 40 percent lower than the next-lowest tobacco-attributable death rate among EU countries. Swedish females, apparently not as enthusiastic about snus, have cigarette smoking rates—and tobacco-related death rates—similar to those of women in the rest of the EU.



Two popular brands of Swedish snus (andreas hagerman/Flickr)

Swedish men are not shy about using tobacco. Their overall tobacco consumption is actually higher than that of males in most western nations. Yet their smoking rate is very low, and extensive research has found little evidence that sustained use of snus causes any serious health problems, including cancer.

The Holy Grail of cigarette substitutes might well be a true pulmonary inhaler that delivered only nicotine (and perhaps some flavorants) into the lungs. A true pulmonary inhaler would be highly addictive, possibly as addictive as cigarettes, but without the severe health risks that come with inhaling smoke. (Many members of the public believe nicotine to be the dangerous element in cigarette smoke. It isn't. The principal danger associated with nicotine is its addictiveness, which keeps people inhaling scores of toxic chemicals in cigarette smoke.)

Enter Dr. Jed Rose from Duke University. A co-inventor of the nicotine patch and long-time, well-respected smoking cessation researcher, Rose developed a device that carries nicotine directly into the lungs, accompanied only by pyruvate, a substance already in our bodies. Rose tried to sell his patent to major pharmaceutical companies, but none of them bought it. We suspect that these firms did not want to be associated with selling an addictive substance, especially one with a reputation as unsavory as nicotine's.

Rose eventually offered the patent to Philip Morris International (PMI, not to be confused with Philip Morris USA). PMI bought the patent and announced last year that it intended to test-market a new product—one that sounds suspiciously like Rose's inhaler—during the next few years, possibly in Europe.

Although e-cigarettes and other smokeless products are likely to benefit individual smokers, we do not believe that any of today's THR options have much potential to greatly reduce smoking rates. In a different environment, they might make a significant contribution. More on this after we take a look at the final group of tobacco control advocates: The Endgamers.

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The Endgamers: Drastic Times, Drastic Measures?

Frustrated with the slow pace of smoking reduction, a third group has emerged within the tobacco control community. Their radical approaches have come to be labeled tobacco endgame policies.

The largest group of endgame proposals includes variations on

prohibition. One, developed by academics in Singapore, calls for prohibiting the possession of tobacco products by anyone born after the year 2000—creating a so-called tobacco-free generation. The Australian state of Tasmania is currently considering adopting this as policy.

Another strategy, originating in New Zealand, involves gradually cutting off tobacco supply by increasing quotas on sales and imports. (Because New Zealand is a relatively small and isolated island, smuggling is less of a concern than it is in the United States.) In 2011 the New Zealand government committed to becoming smoke-free by 2025, which it defined as a national smoking prevalence below 5 percent. As it considers more radical proposals, the country is making use of traditional measures, such as further raising tobacco taxes and restricting smoking in more and more areas.

Smoking prohibition in itself is not a new idea. In the early 1600s, when Ottoman subjects were beginning to take up tobacco smoking, Sultan Murad IV adopted the most draconian tobacco-control policy of all time: He declared smoking punishable by death. He is reported to have enforced his policy by having smokers “drawn and quartered by four strong horses”—thus providing the first definitive proof that smoking is bad for your health. Because the draconian policy did not stop his citizens from smoking, however, he also offered the first incontrovertible evidence for the seductiveness of nicotine.

