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Bureau

One would think that the mere image of a bulgy cheek spewing brown, foul-smelling goo would be more than enough to turn anyone, especially appearance-conscious teens, off of using smokeless tobacco (ST). But then, these media-savvy adolescents probably have discovered *snus*, a smoke- and spit-free tobacco. According to a recent article in Reuters, [1] the use of ST is on the rise among US teens, reversing a downward trend in tobacco product use by adolescents. The Reuters article cites comments made by Terry Pechacek, PhD, Associate Director for Science, Office on Smoking and Health, National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention (CDC), in a report to a US Congressional Panel. Among his comments is the suggestion that ST-using Major League Baseball® (MLB) players may be influencing young men to take up the cancer-causing habit. In his report, Dr. Pechacek noted that "the recent increases in ST use by adolescent boys and young adult men and the increasing dual use of cigarettes and ST products may portend a leveling off or even a reversal in the decline in smoking, the perpetuation of nicotine dependence, and continuing high levels of tobacco-related disease and death in the country." [2] Given this grim outlook, healthcare professionals need to kick up their fight against teen tobacco use by increasing their focus on smokeless forms of tobacco.

## Smokeless Tobacco

ST (also known as *spit*, *plug dip*, *chaw*, *rack*, *spits*, *grizz*, and *tasties*) comes in 2 forms: chew and snuff. Chewing tobacco is available in loose-leaf, twist, and plug forms, whereas snuff comes in moist, dry, and sachet forms. [2,3]

1. *Snuff*: Available in dry or moist forms, snuff is finely ground or shredded tobacco leaves that are packaged in tins or teabag-like pouches. A pinch of snuff is placed between the lower lip and gum or cheek and gum. Users typically spit out the tobacco juices, but those who swallow the juices become more addicted. Dry forms of snuff can be sniffed into the nose; using snuff is also called *dipping*. [2,3]
2. *Chew (chaw)*: A wad of chewing tobacco is placed inside the cheek and held there, sometimes for hours, and users spit out the tobacco juices. Chew is made from loose tobacco leaves that are sweetened and packaged in pouches.
3. *Plug*: Chewing tobacco is pressed into a brick, usually with the help of molasses or another sweet syrup. Users cut off or bite off a piece of the plug and hold it between the cheek and gum, spitting out the tobacco juices.
4. *Twist*: Twist is flavored chew, braided and twisted into rope-like strands. It is held between the cheek and gum, and users spit out the tobacco juices.
5. *Snus*: The relatively new snus (pronounced "snoos") is a smokeless, spitless tobacco product that originated in Sweden. Snus comes in a pouch that is placed between the upper lip and gum for about a half-hour before discarding.
6. *Dissolvable tobacco products*: Pieces of compressed powdered tobacco, similar to small hard candies, dissolve in the mouth and require no spitting of tobacco juices. Instead, they melt like breath mints. Sometimes called "tobacco lozenges," these products are sold in shiny plastic cases and are not to be confused with the nicotine lozenges used for smoking cessation. Dissolvable tobacco products include [4]:
  - o *Orbs*: similar to popular tiny breath mints;
  - o *Sticks*: similar to toothpicks; and
  - o *Strips*: similar to mouthwash breath strips.

According to the National Cancer Institute, ST contains at least 28 carcinogens in varying concentrations. The most harmful

are the tobacco-specific nitrosamines, which are formed during the growing, curing, fermenting, and aging of tobacco. Tobacco-specific nitrosamines have been detected in some ST products at higher levels than levels of other types of nitrosamines, which are allowed in foods, such as bacon and beer. Other carcinogens include *N*-nitrosamino acids, volatile *N*-nitrosamines, benzo(a)pyrene, volatile aldehydes, formaldehyde, acetaldehyde, crotonaldehyde, hydrazine, arsenic, nickel, cadmium, benzopyrene, and polonium-210. Similar to smoked tobacco, ST contains nicotine, which is addictive, and the amount of nicotine absorbed from ST is 3 to 4 times greater than the amount delivered by a cigarette. Nicotine is absorbed more slowly from ST than from cigarettes; however, more nicotine per dose is absorbed from ST than from cigarettes, and the nicotine stays in the bloodstream for a longer time. [5]

### Prevalence of Smokeless Tobacco Use in Teens

In 1970, men aged 65 years or older were almost 6 times as likely as those aged 18 to 24 years to use ST regularly, but by 1991, young men were 50% more likely than the oldest men to be regular users. [6] The 2009 Youth Risk Behavior Surveillance Survey [7] (YRBSS), which summarized results from public and private schools with students in at least 1 of grades 9-12 in the 50 US states and the District of Columbia, found that 8.9% of students had used ST (eg, chewing tobacco, snuff, or dip) on at least 1 day during the 30 days before the survey. The YRBSS also found that use was higher among boys (15.0%) than girls (2.2%) and higher among white persons (11.9%) than black (3.3%) and Hispanic persons (5.1%). [7]

ST has long been a staple in the rural United States, and it remains a problem among rural youth. The table demonstrates that in many states with large rural areas, prevalence of ST use among youth was higher than the national average. [8] Compared with urban children, rural children in the US are more likely to be poor, be white, and have less educated parents. Rural children also engage in more smoking, drinking, and drug use than their urban counterparts. [9]

**Table. 2009 YRBSS Results on Smokeless Tobacco in US Rural Regions<sup>a</sup>**

State	Prevalence Percentage
<i>National</i>	<b>8.9</b>
Alabama	12.4
Alaska	13.6
Arkansas	12.4
Colorado	10.7
Idaho	9.4
Louisiana	9.6
Kentucky	14.2
Montana	14.6
North Dakota	15.3
Oklahoma	10.5
South Carolina	10.4
South Dakota	14.6
Tennessee	12.2
West Virginia	14.4
Wyoming	16.2

*a Used chewing tobacco, snuff, or dip on at least 1 day during the 30 days before the survey.*

To describe substance use among Pennsylvania rural youth, Aronson and colleagues [10] identified changes and trends from 2001 through 2005 and compared these trends with use among urban youth. They found that ST use was more prevalent among rural youth than urban youth, although a significant shift toward increased ST use among urban 10th-grade boys occurred in 2005. They also found that:

1. ST use by rural Pennsylvania youth far exceeded use reported at the national level.
2. In the 12th grade, approximately 25% of rural boys used ST, compared with no more than 15% of urban boys.
3. Nearly 12% of rural 12th grade girls used ST in 2005.
4. Prevalence doubled for rural girls in 6th through 8th grades in both 2003 and 2005.
5. At nearly every time point and in every grade, lifetime ST use increased for rural girls and boys.

## Health Hazards of Smokeless Tobacco

The health hazards of ST vary as widely as the types of products and the manner in which they are used. Variations in health risks are possible for persons using both cigarettes and ST compared with those using ST alone. Potential hazards include [\[3,11\]](#):

- *Nicotine dependence*: The nicotine in ST is absorbed directly into the bloodstream and is addicting. Withdrawal often creates the same symptoms as those seen in heavy smokers who attempt to quit. Some manufacturers of ST products have altered the nicotine content and pH, added flavors, and packaged moist snuff in sachets as starter products that gradually move novice users on to higher levels of nicotine as their tolerance increases;
- *Cancer*: ST can contribute to oral cancers, as well as cancer of the esophagus and pancreas;
- *Leukoplakia*: ST increases the risk for leukoplakia (precancerous lesions);
- *Heart disease*: ST contains nicotine, which can contribute to cardiovascular disease and hypertension; and
- *Dental problems*: ST can contribute to gingivitis and dental caries.

## The Allure of Smokeless Tobacco

ST has been around for a long time. So why are more teens discovering it now? Increased interest in ST may have several causes [\[3,12\]](#):

1. Teens may still view ST as relatively harmless compared with cigarettes.
2. Adolescent girls may use ST to try to lose weight.
3. With increasing smoking restrictions, ST gives people a way to get nicotine without having to go out in the cold or having to wait until they are out of the no-smoking zone.
4. Recent mergers and acquisitions resulted in the production and sales of ST moving from companies that do not manufacture cigarettes to companies that do manufacture them.
5. New forms and flavors of ST are more appealing to youth. A quick Internet search revealed such flavors as apple, butternut, peach, tequila, black wild cherry, "fresh," and "mellow." Some of the new snus containers are downright adorable.
6. Smokeless products are heavily promoted.
7. Smokeless products are used by youth role models, including MLB players and rodeo stars.

Whereas rodeo stars are more likely to influence rural children, baseball players have a much broader influence, and it is the association between MLB and ST that concerns Dr. Pechacek. Chew is probably as much a symbol of baseball as hot dogs, and its use dates back to the mid-1800s. Players initially used it to keep their mouths moist and gloves soft (by spitting into them). ST use began to decline with the increased use of cigarettes in the 1950s, but players reversed that trend and went back to ST when they learned about the dangers of cigarettes. In 1990, MLB warned players of the dangers of ST and began efforts to help players quit. Since that time, many players have educated young baseball players on the dangers of ST. [\[13\]](#)

## Implications for Healthcare Providers

Healthcare providers need to be as aggressive with ST as they are with cigarettes, in both research and practice. Research must focus on the specific types of ST to firmly establish correlations with health problems, particularly in pediatric users, to understand the short- and long-term effects. Research should also guide the development of evidence-based prevention and cessation programs. Practitioners should work together with dental professionals to incorporate possible ST use into assessment, prevention, and intervention.

**Primary prevention.** Healthy People 2010 objective 27-3 is "Reduce the initiation of tobacco use among children and adolescents." Objective 27-4.a is "Increase the average age of first use of tobacco products by adolescents (from an average of age 12 to an average of age 14 years) and young adults (from age 15 to age 17 years)." [\[14\]](#) These are average ages of initiation; children younger than 12 years often use tobacco products, especially ST. The first thing practitioners must do is to take this objective to a lower age level, preferably beginning with the early school-age years. Primary care providers

need to incorporate ST prevention into anticipatory guidance counseling and to instruct parents to talk with their children about ST products and to role-model positive health behaviors by not using ST -- or any form of tobacco.

**Secondary prevention.** All healthcare providers should ask clients, regardless of age, about the use of ST. This is especially true in inpatient facilities, where clients may be using these products while hospitalized. Of course, healthcare providers should also encourage -- and help -- clients to quit. Quitting is not easy, even for adolescents, because of nicotine dependence. Withdrawal symptoms (dizziness, depression, frustration, impatience, anger, anxiety, irritability, trouble sleeping, difficulty concentrating, restlessness, headaches, tiredness, and increased appetite) are unpleasant. Users may benefit from cessation support groups, such as Nicotine Anonymous or local groups available through the American Cancer Society or those listed in the phone book. Appropriate nicotine replacement treatments may be beneficial; however, these are not approved by the US Food and Drug Administration (FDA) for ST cessation. Smoking cessation medications (such as Bupropion [Zyban®]) are not FDA-approved for children younger than 18 years. [\[15,16\]](#)

On a broader level, healthcare providers can assist schools and state agencies by providing group education on ST. Several federal agencies are available to provide support, including the CDC's Smoking and Tobacco Use Media Campaign Resource Center. [\[17\]](#) Finally, healthcare providers can become involved in advocacy by supporting legislation that minimizes ST advertising and exposure to minors. Healthcare providers cannot allow the fight against tobacco to be chewed up and spit in the gutter.