

Tobacco Dependence Treatment
Continuing Education Program
For Health & Human Service Professionals

Background Information
About Tobacco

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Historic Tobacco Tidbits:
Tobacco and the Americas

- Tobacco was grown by American Indians before the Europeans came from England, Spain, France, and Italy to North America
- Tobacco was the first crop grown for money in North America
 - In 1612 the settlers of the first American colony in Jamestown, Virginia grew tobacco as a cash crop. It was their main source of money
- Tobacco helped pay for the American Revolution against England

Historic Tobacco Tidbits:
First Commercial Cigarettes

- The first commercial cigarettes were made in 1865 by Washington Duke on his 300-acre farm in Raleigh, North Carolina. His hand-rolled cigarettes were sold to soldiers at the end of the Civil War
- In 1881 James Bonsack invented the cigarette-making machine which could make 120,000 cigarettes a day
- Bonsack teamed up with James "Buck" Duke and they built a factory that made 10 million cigarettes their first year and one billion cigarettes five years later

Historic Tobacco Tidbits: World War I and II


- World War I (1914-18) and World War II (1939-45) contributed to the great cigarette expansion when soldiers were given cigarettes as part of their C-Rations
- By 1944 cigarette production was up to 300 billion a year and Service men received about 75% of all cigarettes produced
- Since World War II there have been six giant cigarette companies in the United States: Philip Morris, R.J. Reynolds, American Brands, Lorillard, Brown & Williamson, and Ligette & Myers (now called the Brooke Group)

Historic Tobacco Tidbits: The Truth Revealed

- In 1964 the U.S. Surgeon General issued a report about the dangers of cigarette smoking. He stated that nicotine and tar in cigarettes cause lung cancer
- In 1965 Congress passed the Cigarette Labeling and Advertising Act requiring every cigarette pack have a warning label on its side stating, "Cigarettes may be hazardous to your health."
- In 1984 Congress passed the Comprehensive Smoking Education Act which required cigarette companies to change the warning labels on cigarette packs every three months

Smokers Do Quit!

- Today there are approximately as many former smokers as current smokers
- U.S. *adult* smoking rates are declining:
 - Early 1960's - 41%
 - 1987 - 28.8%
 - 1990 - 25.5%
 - 1998 - 22.9%
 - 2005 - 20.89%



Quitting is a Process... ...not an Event

The average smoker takes 12-14 attempts before they are successful

- Shu-Hong Zhu, University of California, 2007



When will you be ready to quit?

Types of Consumable Tobacco

Smoking Tobacco

- Cigarette
 - Clove Cigarettes
- Cigar
 - Cigarillo
 - Bidis/Beedies
- Pipe

Smokeless Tobacco

- Snuff
- Chew
- Snus
- Gutka

Cigarette

- **Cigarette** is a small roll of finely-cut tobacco leaves wrapped in a cylinder of thin paper for smoking
- Nicotine, the primary psychoactive chemical in cigarettes, has been shown to be addictive
- Statistically each cigarette smoked shortens the users lifespan by 11 minutes

Consequences of Cigarette Use

- Cigarette smoking is the single most avoidable cause of death: causing 1 out of every 6 deaths, killing about 450,000 Americans annually
- Smoking causes 90% of lung cancer, throat cancer and emphysema



Healthy lung vs. Smoker's lung

Clove Cigarettes

- Clove cigarettes are also known as Kreteks (cree-techs) they are considered by some as an alternative cigarette
- Made of a complex blend of tobacco and clove
- When smoked clove produces a compound known as eugenol
- Eugenol numbs the smoker's throat and can cause:
 - Respiratory infections
 - Fluid build-up in the lungs
 - Bloody sputum
 - Suspected cause of aspiration pneumonia, which can cause sudden death



Herbal Cigarettes

- Marketed to teens and young adults
- Does not contain tobacco
- Has been used as tobacco cessation aid
- Filled with consumable products such as:
 - Corn Silk
 - Mint
 - Lemongrass
 - Yerbia Santa
 - Ginseng
 - Jasmine
 - Damiana
 - Damiana may produce euphoria.



Tar

- Tar – is the common name for the resinous partially combusted particulate matter produced by the burning of tobacco
 - Tar is purportedly the most destructive component in habitual tobacco smoking
 - Below is a picture of a Tar Jar which contains the amount of tar that is produced from smoking 10 cigarettes per day for one year



Nicotine

- Nicotine –Nicotine is the chemical in tobacco products that interacts with the brain and causes addiction
 - The use of tobacco products such as cigarettes, chew, or cigars allow for the nicotine to move quickly throughout the body and the brain
 - Nicotine can be absorbed through the mucosal linings and skin of the nose and mouth, or through inhalation. When inhaled, the nicotine is absorbed by the lungs and moved into the blood stream from which it reaches the brain in less than eight seconds
 - Nicotine functions as an antiherbivore chemical with particular specificity to insects and has been widely used as an insecticide

Carbon Monoxide (CO)

- Carbon Monoxide – is the odorless, colorless, tasteless gas produced from burning tobacco
 - CO is highly toxic to humans and animals
 - CO combines with hemoglobin to produce carboxyhemoglobin, which is ineffective for delivering oxygen to bodily tissues. This condition is known as anoxemia
 - CO readings can be obtained from a device known as a Breath Carbon Monoxide Monitor

Breath Carbon Monoxide Monitor



- Breath Carbon Monoxide Monitors allow clinicians to easily obtain a CO reading from their patient
 - A CO reading of 0-8 ppm indicates little to small amount of CO exposure with 4-8 ppm indicating possible secondhand smoke exposure or smoking has occurred a few hours prior to administration of reading
 - A CO of 9-18 ppm is consistent with a reading obtained from a light smoker (~10 cigarettes per day) or a average smoker (~ pack per day) who has not used in several hours
 - 19 ppm + is consistent with a reading obtained from a heavy smoker

ppm = parts per million

Amount of Tar, Nicotine, and CO in Brand's of Cigarettes

Brand	Tar	Nicotine	CO
Pall Mall-Kings	27	1.8	17
Camel-Regular	22	1.4	13
Newport 100	19	1.4	18
Marlboro-100/King	16	1.1	14
Virginia Slims 100	14	1.1	12
Marlboro Lights-100	10	0.8	11
Carlton Ultra Light	0.5	.05	0.5

Cigars

- One cigar can contain as much tobacco as a pack of cigarettes and can deliver 10 – 20 mgs of nicotine
- Cigars produce more harmful particles in secondhand smoke than cigarettes
- 10 million Americans now regularly smoke cigars, this is up 2 million since 1993



Cigarillo

- Cross between a cigarette and a cigar. Contains ~ 3 grams of tobacco while a cigarette contains ~ 1 gram of tobacco
- Not meant to be inhaled
- Increasing in popularity among young adults



Bidi/Beedi

- Made in India from the tendu or temburni leaf, filled with ~ 0.2 - 0.3 grams of tobacco flake, hand rolled secured with a string at one end
- Delivers more nicotine, carbon monoxide and tar than a cigarette
- Demand growing among U.S. teens
 - Considered "trendy" or "natural"
 - Is flavored and less expensive than cigarettes



Pipe

- Pipes are commonly used among:
 - Males ages 55-75
 - Caucasians
 - 48.4 % are Professionals
- There is a lower risk of lung cancer compared to cigarette smokers
- Many cigar and pipe smokers are current or ex-cigarette smokers



Smokeless Tobacco

- Hidden addiction
- May not be obvious to family, co-workers or healthcare professionals
- Per capita consumption of moist snuff has increased in the past decade

Snuff

- Snuff is ground or pulverized tobacco, which is generally insufflated or "snuffed" through the nose. It is a type of smokeless tobacco
- Snuff can be dry or moist
- Moist snuff delivers significant amounts of nicotine ~ 1.5 – 2.5 mgs of nicotine



Dry Snuff

- Dry snuff, or European snuff is usually scented or flavored and is intended to be sniffed through the nose. It delivers ~ 1.0 mg of nicotine per inhalation
- Typical flavors are floral, mentholated (also called 'medicated'), fruit, spearmint, rose, cinnamon and spice, either pure or in blends



Moist Snuff or Dip

- Moist snuff is called *snuff or dip* in the U.S.
- It is applied to the gums, rather than sniffed
Called dipping tobacco, it is similar to snus
- American snuff comes in many varieties, with flavors including peach, mint, and licorice
- Dipping tobacco is distinct from chewing tobacco



Chew

- Chewing tobacco (also known as chew, chew, chaw) refers to a form of smokeless tobacco furnished as long strands of whole leaves and consumed by placing a portion of the tobacco between the cheek and gum or teeth and chewing
- Unlike dipping tobacco, it isn't ground and must be mechanically crushed with the teeth to release flavor and nicotine



Chew (cont'd)

- Unwanted chew juices are expectorated.
- Chew is not a safe substitute for cigarettes.
- Chew causes cancer and other serious oral diseases.
- Prevalence higher among:
 - Caucasian
 - Males aged 18-25
 - Rural areas



U.S. made 19th century yellow ware spittoon from Five Points, New York City.

Categories of Smokeless Tobacco/Snuff Products by Level of Nicotine	
Product	Level of Nicotine (% free nicotine)
Copenhagen	Very High (79%)
Kodiak Wintergreen	Very High (79%)
Skoal Original Fine Cut Wintergreen	Medium High (28%)

Tobacco Control 1995

Categories of Smokeless Tobacco/Snuff Products by Level of Nicotine	
Product	Level of Nicotine (% free nicotine)
Skoal Long Cut Straight Cut Wintergreen Cherry	Medium (19-23%)
Skoal Bandits Classic Wintergreen	Low (7-10%)

Tobacco Control 1995

Categories of Smokeless Tobacco/Snuff Products by Level of Nicotine	
Product	Level of Nicotine (% free nicotine)
Hawken Wintergreen	Low (7-10%)
Gold River Long Cut	Low (7-10%)

Tobacco Control 1995

Spit Tobacco Advertising



Ty Murray-Pro Rodeo Athlete and “King of the Cowboys”



Flavored Spit Tobacco

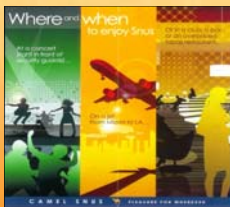


Spitless Tobacco



Snus is unique in that it is steam-cured rather than fire-cured, is not fermented and contains no added sugar

SNUS Advertising



Gutka



- In many countries, tobacco is added to betel quid and the product is known as *gutka*, *ghutka*, or *gutkha*
- Betel quid is a combination of betel leaf, areca nut, and slaked lime or chalk
- The quid is chewed after the nuts are mixed with half a gram of burnt chalk or lime and wrapped in Betel leaf
- Properly prepared Betel nuts are unquestionably carcinogenic
- CNS stimulant
- Anthelmintic (drugs that expel parasitic worms from the body)

Biochemical Markers

- Cotinine
- Nicotine
- Carbon Monoxide (CO)
- Thiocyanate



Cotinine

- Cotinine is a metabolite of nicotine
- Cotinine has an in vivo half life of approximately 20 hours, and is typically detectable for several days to up to one week after the use of tobacco
- The level of cotinine in the blood is proportionate to the amount of exposure to tobacco smoke, so it is a valuable indicator of tobacco smoke exposure, including secondary (passive) smoke

Cotinine Continued

- Drug tests can detect cotinine in the blood, urine, or saliva
- People who do not smoke or who are not exposed to smoke should not have measurable cotinine
- People who do smoke will have a cotinine level of 10 or higher in their blood, and a typical smoker has levels of 150 to 450 units. Levels in urine are ten times higher

Nicotine

- Nicotine is a highly addictive drug
- The pharmacological and behavioral characteristics that determine tobacco addiction are similar to those that determine addiction to drugs such as heroin and cocaine
- Nicotine's mood-altering effects are different by report: in particular it is both a stimulant and a relaxant

Carbon Monoxide

- **Carbon monoxide (CO)** is a colorless, odorless and tasteless gas, which is highly toxic to humans and animals
- Cut off values indicative of a smoker*
 - Carboxy-Hgb -1.7 %+ is indicative of a smoker
- Exhaled Carbon Monoxide - 8 ppm indicates smoker
 - Exhaled CO level between 1-8 ppm indicates possible exposure to secondhand smoke and/or exposure to pollution such as car exhaust

*smoker = individual who smokes tobacco, marijuana, and/or other similar substances

Thiocyanate

- Thiocyanate, also known as **rhodanide**, is a metabolite of hydrogen cyanide.
- Hydrogen cyanide, a colorless, poisonous gas, is one of the toxic byproducts present in cigarette smoke.
- Scientists believe thiocyanate levels provide a dependable biochemical marker for smokers; however, cotinine and exhaled Carbon Monoxide screening are more accurate and cost effective.

Using Biomarkers to Educate

- Cotinine, nicotine, carbon monoxide and thiocyanate can all be used as biomarkers to identify smokers
- Utilization of these biomarkers as detectors of tobacco use in clinical settings can help to educate your patients/tobacco users about the negative health effects of tobacco use
- Conducting carbon monoxide (CO) readings while a tobacco user is attempting to quit can be used to help motivate the individual
 - As the patient smokes fewer cigarettes the CO level decreases
 - Keep a log of CO readings at each visit and show the patient how reduction in smoking reduces CO levels in their body

Summary

- Tobacco is dangerous when consumed by smoking or chewing
- In the United States tobacco use causes 50 deaths per hour
- Nicotine, one of the components of tobacco, is highly addictive
- Tobacco is consumed through a variety of products which have all been proven to have negative health consequences
- Tobacco use can be detected through saliva, urine or blood samples
- Tobacco users can quit and you can make a difference

Online Resources

- www.smokefree.gov (CDC)
- <http://www.surgeongeneral.gov/tobacco/> (DHHS)
- www.fda.gov/TobaccoProducts/default.htm (FDA)
- www.cancer.org (American Cancer Society)

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