Lecture 10

Tobacco
HEAL 101: Health and Lifestyle
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Objectives

- Discuss tobacco and our society
- Discuss the chemical components of tobacco
- Discuss how tobacco consumption affects the risk for a variety of diseases
- Discuss the unique risks associated with smokeless tobacco
- Discuss the health benefits of quitting

Annual Smoking Deaths

![Annual Smoking Deaths Diagram]

Trends in Smoking

- Tobacco industry spends $18 million per day on advertising
- 86% of underage smokers prefer one of the three most heavily advertised brands
- Advertisements in women's magazines imply smoking is sophisticated
- By 1987, cigarette induced lung cancer had surpassed breast cancer as the leading form of cancer death among women
- 18-24 year-olds are new target for tobacco advertisers with bars, music festivals, models, and peer influences

Tobacco and Advertising

- Tobacco and Advertising
- $150 billion in annual health-related economic loss from 1995-1999
- Medical expenditures totaled $75 billion and $89.1 billion in indirect costs like absenteeism
- Smoking costs individual smokers approximately $3,391 per year

Financial Costs to Society
What’s in Cigarette Smoke?

<table>
<thead>
<tr>
<th>CANCER-CAUSING AGENTS</th>
<th>METALS</th>
<th>OTHER CHEMICALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benz[a]pyrene</td>
<td>Aluminum</td>
<td>Acetic acid (marker)</td>
</tr>
<tr>
<td>B-Naphthylamine</td>
<td>Copper</td>
<td>Acetone (nail polish remover)</td>
</tr>
<tr>
<td>Cadmium</td>
<td>Gold</td>
<td>Ammonia (floor/toilet cleaner)</td>
</tr>
<tr>
<td>Oxyacids</td>
<td>Lead</td>
<td>Anemic (poison)</td>
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<tr>
<td>Dibenzo a,c,h-pyrene</td>
<td>Magnesium</td>
<td>Butane (cigarette lighter fluid)</td>
</tr>
<tr>
<td>Nickel</td>
<td>Mercury</td>
<td>Cadmium (rechargeable batteries)</td>
</tr>
<tr>
<td>Nitrosamines</td>
<td>Silicon</td>
<td>Carbon monoxide (car exhaust fumes)</td>
</tr>
<tr>
<td>N. nitrosomimicidine</td>
<td>Silver</td>
<td>DOP/Dieldrin (insecticides)</td>
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<tr>
<td>PAH’s</td>
<td>Thiram</td>
<td>Ethanol (alcohol)</td>
</tr>
<tr>
<td>Polonium 210</td>
<td>Zinc</td>
<td>Formaldehyde (preserver of body tissue and fabric)</td>
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<tr>
<td>Toluidine</td>
<td></td>
<td>Hexamine (barbecue lighter)</td>
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<td></td>
<td></td>
<td>Hydrogen cyanide (gas chamber poison)</td>
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<tr>
<td></td>
<td></td>
<td>Methane (swamp gas)</td>
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<tr>
<td></td>
<td></td>
<td>Methanol (rocket fuel)</td>
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<tr>
<td></td>
<td></td>
<td>Naphthalene (mothballs)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Nicotine (narcotic/addictive drug)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Nitrobenzene (gasoline additive)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Nitrosamine (gasoline additive)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Nitric oxide (disinfectant)</td>
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<tr>
<td></td>
<td></td>
<td>Sisal acid (candle wax)</td>
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<tr>
<td></td>
<td></td>
<td>Toluene (industrial solvent)</td>
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<td></td>
<td></td>
<td>Vinyl chloride (makes PVC)</td>
</tr>
</tbody>
</table>

*nicotine *carbon monoxide *tar

Physiological Effects of Nicotine

- Major psychoactive ingredient - *addictive* substance
- Absorbed through lungs in smoking; absorbed through mucous membranes when chewing or sucking tobacco
- Powerful central nervous system stimulant to produce aroused, alert, mental state
- Stimulates adrenal glands
- Heart, respiratory rate and blood pressure increases
- Decreases appetite and taste

Physiological Effects of Carbon monoxide and Tar

- **Carbon monoxide**
  - Displaces oxygen blood
  - Competes for oxygen at the hemoglobin binding site
  - Very difficult for oxygen to reacquire these sites
- **Tar**
  - Sticky byproduct of burned tobacco
  - Known carcinogen

Cigarettes

- Nicotine cigarettes may be filtered or non-filtered
- Clove cigarettes contain 40% ground cloves and 60% tobacco
  - They are mistakenly thought to be safer and less risky than tobacco cigarettes
  - They contain higher levels of tar, nicotine and carbon monoxide than regular cigarettes
- Eugenol (oil of cloves) allows smoker to inhale more deeply
Since 1991, cigar sales have increased 250%.

Fad among young men and women fueled by celebrities.

Cigar smoke contains 23 poisons and 43 carcinogens.

Smoking 1-2 cigars daily can double the risk for oral cancers compared with someone who has never smoked.
Lung Cancer

Smokeless and Chewing Tobacco

- Approximately 5 million U.S. adults use smokeless tobacco (young adult males)
- Two types: chewing tobacco and snuff
- Chewing tobacco is placed between the gums and teeth for sucking or chewing – also referred to as dipping
- Snuff – finely ground form of tobacco inhaled, chewed or placed against gums

Oral Cancer
**Tobacco Addictions**

- 60-80% of people have tried a cigarette – some become addicted and others do not
- Why are some people predisposed to becoming addicted?

**Health Hazards of Smoking**

- Cancer – American Cancer Society estimates 85-90% of all cases of lung cancer are tobacco related
- Cardiovascular disease – smokers have a 70% higher death rate from heart disease than nonsmokers (smoking ages the arteries)
- Stroke – smokers are twice as likely to suffer a stroke

**Health Hazards of Smoking**

- Respiratory disorders – breathlessness, chronic bronchitis, emphysema
- Sexual disorders – male performance problems 2-4 times more likely in smokers verses non smokers
- Other effects: gum disease; use of more medications

**WARNING**

**TOBACCO USE CAN MAKE YOU IMPOTENT**

Cigarettes may cause sexual impotence due to decreased blood flow to the penis. This can prevent you from having an erection.

Health Canada
Lower birth weight
More pneumonia, asthma, and allergies
Greater chance of SIDS

Environmental Tobacco Smoke

- Mainstream and sidestream smoke
- 1 hour in smoke-filled room ≈ smoking 1 cigarette
- Risks from ETS:
  - Sidestream contains more carcinogenic substances than a smoker inhales
  - Second hand tobacco smoke is a cancer causing agent
  - Exposure to ETS by children increases risk of lower respiratory infections, especially in children under 5
  - Many people are allergic to cigarette smoke

Quitting

- One third of smokers attempt to quit annually
- 90% of attempts to quit fail
- Breaking the nicotine addiction:
  - Nicotine replacement products
  - Pills, inhaler, gum, patches, nasal sprays
  - Cold Turkey
- Antismoking therapies:
  - Aversion therapy, operant strategies, self-control strategies, group support
Benefits of Quitting

- Body begins repair immediately upon quitting
- Within 8 hours of quitting, carbon monoxide/oxygen levels are normal
- Mucus is eliminated from airways within a month
- Risk for lung cancer and stroke decreases after 1 year