SMOKING CESSATION

PHYSICIAN INTERVENTION

Julita McPherson, MD
Assistant Professor of Family Medicine
Loyola University Medical Center

OUTLINE

- Epidemiology
- Pharmacology and pathology
- Barriers to cessation
  - Beneficial effects of cessation
  - Physician’s role

TOBACCO USE:
LEADING PREVENTABLE CAUSE OF MORBIDITY AND MORTALITY

- Associated with >500,000 deaths per year (~20% of all deaths)
- $22 billion dollars in smoking related health costs in 1995
- $100 billion dollars in smoking related health costs for 2002
- ~60% of new smokers are <21 years old

- Why is tobacco use an important public health issue?
- What effect have societal views and government policy had on smoking?

Demographics

- Since 1965 prevalence has declined by 0.5-1.0% annually
- Prevalence is inversely related to education, SES
- Prevalence greater in Minority groups and Men
- Incidence is steadily increasing in both Women and adolescents

More than just cigarettes…
Chewing ("Spit") Tobacco, Cigars and Pipes

- More common among males and athletes
- Accounts for <10% of tobacco use
- Greater exposure to carcinogens than cigarettes
- Equally, if not more addictive
- Increased risk of oropharyngeal cancers

So what is being done to address this problem?

INSTITUTIONAL INTERVENTIONS: (ie., non-clinical)

- Federal and state cigarette excise taxes
- FDA regulations
- Advertising restrictions
- State and federal torts
- Insurance policy financial incentives
- Smoking Bans

Does Taxation decrease Representation? ...YES !!!

- Reduces population consumption of tobacco products
- Increases cessation rates
- States with the highest cigarette taxes, such as Washington State, Washington D.C., Hawaii, Arizona, Massachusetts Connecticut and Minnesota, have lower rates of teenage smokers
- Strong evidence of effectiveness in reducing prevalence in adolescents and young adults


Who is this guy?

Advertising restrictions

- Evidence of reduced incidence of smoking in children
- Jury is still out is this a directly related
**Torts: No help at all!**
- ~30% going to attorney’s fees
- Less than 40% diverted to anything remotely associated with healthcare
- Less than 25% devoted to smoking prevention or education
- No evidence of reduced incidence and prevalence due to law suits
  *Bottom line... Roads, highways, lawyers’ pockets...*

**Insurance Restrictions**
- Some reduction among payers
- Correlated with the degree of cost increase (penalty) for smokers
- Complete denial of coverage based on risk assessment profile

**Smoking Bans**
- Strong evidence that they reduce secondary exposure
- Significant reduction in daily consumption of tobacco by workers in smoking-banned environments
- General population reductions not proven


**Which tobacco components are related to morbidity and mortality?**
- What are their effects on different tissues?

**NICOTINE**
- Each cigarette has 8-10 mg of nicotine
- Crosses blood-brain barrier in seconds as cotinine
- CNS: stimulus
- CV: Increase in both systolic and diastolic BP, vasoconstrictive
- Endo: Increase in Epi/norepi, cortisol, endorphins

**NICOTINE DEPENDENCE**
- Nicotine is an addictive substance – As defined by the Surgeon General, DSM-IV and WHO definitions
- Creates tolerance, physical dependence and withdrawal symptoms
**CARBON MONOXIDE**
- Toxic gas
- 2-6% of cigarette smoke
- 200 times greater affinity for hemoglobin than oxygen (Shifts the oxygen-hemoglobin dissociation curve to the left)
- Myocardium is especially sensitive to carbon monoxide induced hypoxia

**FIBROUS TARS, AMINES AND OTHER TOBACCO COMPONENT EFFECTS**
- Lipids
- Blood components
- Coronary vasculature
- Cerebral vasculature
- Peripheral vasculature
- Delayed conception
- Premature labor
- Low birth weight
- Miscarriage
- Aneurysms
- Grafts and prosthetic devices
- Perioperative morbidity
- Oncogenesis
- Early menopause
- Drug metabolism

---

**Studies show that the ill effects of tobacco use are dose dependent...**

**So what did the manufacturers do?**

**Viola...... “Low-Yield Cigarettes”**
- Filter tipped cigarettes-95%
- Lower tar/nicotine-55%
  - Only reduces rate of lung and laryngeal cancers not other tobacco related disease entities
  - And the rate of reduction is minimal compared to that of quitting
- Because of nicotine dependence smokers adapted their smoking use: deeper inhalation, increased quantity

---

**Patterns of Quitting and Relapsing:**
- 80% of smokers have tried to quit in their lifetime
- 30% of smokers have tried to quit within the past year
- 2/3 resume within a few days
- Successful cessation = abstinence > 6 mos.
- Abrupt or “cold turkey” quitters are more successful than “gradual reducers”
- Less than 8% of “soo first try” quitters are tobacco free six months later.
- Most successful quitters have require more than one attempt.

---

**What are the barriers to smoking cessation?**
NICOTINE WITHDRAWAL:

- Up to three weeks
  - Craving (many months)
  - Dysphoria
  - Depressed mood
  - Insomnia
  - Agitation
  - Anxiety
  - Impaired concentration
  - Increased appetite
  - Weight gain

Habituation

- Hand-to-mouth
- Daily routine: Home, Car, Work
- Social interactions
- Smell

Here’s The Skinny on WEIGHT GAIN...

- 80% of smokers gain weight after quitting
- Average weight gain is 6 pounds
- Simultaneous smoking cessation and weight loss attempt increases failure of both
- Health benefits of smoking cessation outweigh the risks of weight gain

What are the beneficial effects of cessation?

- Is it ever “too late” for cessation to be beneficial?

NORMALIZE OR TOWARD NORMAL AFTER 8 WEEKS OF CESSATION:

- Blood viscosity
- Hematocrit
- Plasma fibrinogen
- White blood cell count
- Blood cell filterability
- Serum HDL levels

LOWER MORBIDITY AND MORTALITY

- Smoking cessation lowers all-cause death rates
- Risk of CAD reduced by ~50%
- Risk of initial MI reduced by ~50% at 1 year of cessation
- In person without established CAD, Risk of MI ~8 years after cessation approaches that of person who never smoked
- After MI, cessation may double life expectancy
LOWER MORBIDITY AND MORTALITY

- Decrease risk of CVA with cessation
- Risk of CVA approaches that of non-smoker at ~5 years
- Decrease risk of PVD development
  - Reduced intermittent claudication
  - Reduced amputations

What is the role of the Doctor?

- How well do physicians identify patients with tobacco habits?
- How frequently do we counsel them?
- Does our intervention have any effect on success rates?

DOCTORS UNDER-ADVISE SMOKING CESSATION

- < 50% of smokers are counseled on cessation on routine visits
- This statistic has not improved since 1987
- ~30% of doctors believe smoking cessation counseling on routine visits is not cost effective/not useful

PATIENTS LISTEN TO THEIR DOCTORS ABOUT SMOKING CESSATION

- ~70% of smokers said they would consider stopping if their doctor urged them to do so
- Counseling, combined with pharmacotherapy increases 1-year success rates four-fold (~35%)
- ~40% of smoking post-MI patients successfully quit with intervention from their doctor (~10% without)
- There is a strong dose-response relation between the session length/frequency and success rates

COUNSELING ON CESSATION IS COST EFFECTIVE

- 3 minutes or less works
- Risk reduction through physician guided cessation is 10 times more cost effective than treatment of mild hypertension alone and 50 times more cost effective than treatment of hypercholesterolemia alone


How should smokers be evaluated?
- Should all smokers be counseled in the same manner?
- How should doctors determine patient readiness to quit?
Physicians can change smoking cessation rates by:
- Cautioning pt. to quit during routine office visit-1-3%
- Providing a self-help pamphlet-7-12%
- Negotiating a quit date-15%
- Adding pharmacologic/adjuvant treatment modalities (varies some as high as 35%)

“Five-A” Approach
- Ask about tobacco use
- Advise to quit through clear personalized messages
- Assess willingness to quit
- Assist to quit
- Arrange follow-up and support

Ask
- Ask every patient about tobacco use
- Tobacco history
- Fagerstrom scale
- Modified CAGE
- Triggers
- Risk factors and active disease

Fagerstrom Scale: Determines the degree of nicotine dependence
1. How soon after you awake do you smoke your first cigarette?  
   0. After 30 minutes 1. Within 30 minutes
2. Do you find it difficult to refrain from smoking in places where it is forbidden, such as the library, theater, or doctors’ office?  
   0. No 1. Yes
3. Which of all the cigarettes you smoke in a day is the most satisfying?  
   0. Any other than the first one in the morning 1. The first one in the morning

Fagerstrom Scale
4. How many cigarettes a day do you smoke?  
   0. 1-15 1. 16-25 2. More than 26
5. Do you smoke more during the morning than during the rest of the day?  
   0. No 1. Yes
6. Do you smoke when you are so ill that you are in bed most of the day?  
   0. No 1. Yes
7. Does the brand you smoke have a low, medium, or high nicotine content?  
   0. Low 1. Medium 2. High

Fagerstrom Scale
8. How often do you inhale the smoke from your cigarette?  
   0. Never 1. Sometimes 2. Always

SCORING: Maximum score=11
Score of 7 or greater suggests physical dependence on nicotine.

Advise, Assess, Assist:
Routine Counseling
- Most will listen and all will benefit
- Encourage and discuss benefits
- Do not use scare tactics
- Educational pamphlets enhance success rates
- Contract for a quit date when patient is ready
- Involve patient’s spouse or family

Arrange: Follow-up Counseling
- Critical to cessation success
- May be on routine visit with MD or with an RN or other trained health professional
- Routine telephone contact is also effective
- Encourage, review triggers and cessation strategy

BEHAVIORAL MODIFICATION
- Identify key triggers to smoking cravings
- Remove smoking stimulus artifacts
- Within reason, avoid environments and people associated with smoking
- Plan healthy alternative responses to triggers

EXAMPLES OF ALTERNATIVE RESPONSES TO CRAVINGS
- Exercise
- Relaxation techniques
- Meditation
- Chewing gum
- Hard candy
- Call support group member

Pharmacologic Cessation Aids

NICOTINE REPLACEMENT THERAPY
- Goal is prevention of nicotine withdrawal
- High Fagerstrom score may suggest need for nicotine therapy, dosing and tapering
- Multiple forms available
- All forms more effective when combined with routine counseling
- Relative contraindication in patients with severe active vascular disease or pregnancy
NICOTINE POLACRILEX  
(Gum or Lozenge)  
- Available OTC (eg. Nicorette)  
- Absorbed primarily through buccal mucosa  
- Specific chewing methods  
- Re-dose every 1-2 hours  
- Decrease absorption with acidic beverages (coffee, juice, soda, wine)  
- <10% dependent on gum after 2 years  
- No comparative advantage to tapering or abruptly discontinuing gum  
- Side effects include TMJ pain, mouth and throat soreness, nausea, hiccups, abdominal cramps and flatulence

NICOTINE TRANSDERMAL  
- Available OTC (Nicotrol, Nicoderm CQ)  
- Multiple strengths available  
- Specific application technique must be used  
- Releases a steady and controlled amount of nicotine into capillary beds  
- Allows for easy nicotine weaning after cessation  
- Side effects include skin irritation, sleep disturbance and anxiety  
- Better patient compliance than gum

NICOTINE NASAL SPRAY  
- Mimics pharmacokinetics of smoking: Large bolus of nicotine and rapid increase in nicotine levels  
- Easy regulation of dosing  
- Comparable efficacy to gum or patches  
- Pt. tend to shy away from nasal sprays of any sort  
- Side effects include nasal irritation, lacrimation, rhinorrhea, sneezing and epistaxis

NICOTINE INHALER  
- Greater speed of onset  
- Easy regulation of dosing  
- Comparable efficacy to gum or patches  
- Does not disrupt habituation  
- Side effects include sore throat, cough, bronchospasm

Combination Nicotine Therapy  
- Increasing evidence of efficacy  
- High Fagerstrom smokers  
- Failure with single therapy

ANXIOLYTICS AND ANTIDEPRESSANTS  
- Mood disorders adversely affect smoking cessation  
- Smoking cessation itself induces anxious or depressed symptoms  
- A few anxiolytics and antidepressants may help facilitate smoking cessation
ANXIOLYRICS AND ANTIDEPRESSANTS

- Nortriptyline
- Alprazolam
- Buspirone
- Bupropion (DOC)

Bupropion (ZYBAN)

- Antidepressant
- Proven efficacious
- Good choice in patient with mood disorder or such symptoms in withdrawal

CLONIDINE

- Acts at alpha-2 adrenergic receptors
- Used for opiate withdrawal
- Reduces nicotine withdrawal symptoms
- Questionable efficacy in long-term
- Risks and side-effects
- It may be used as a second-line agent
- Rarely used

ALTERNATIVE ADJUNCTIVE METHODS

- Support groups
- Cognitive therapy
- Aversion therapy
- Hypnosis
- Acupuncture

Cost of Smoking vs. Cost of Pharmacologic Treatment

<table>
<thead>
<tr>
<th>Packs per day</th>
<th>Cost of Smoking (increasing)</th>
<th>Cost of Treatment:* (stable/decreasing)</th>
</tr>
</thead>
<tbody>
<tr>
<td>½</td>
<td>$182  $365  $730</td>
<td>Nicotine gum $230</td>
</tr>
<tr>
<td>1</td>
<td>$365  $730  $1460</td>
<td>Nicotine patch $220</td>
</tr>
<tr>
<td>2</td>
<td>$730  $1460 $2920</td>
<td>Nicotine nasal spray $280</td>
</tr>
<tr>
<td>3</td>
<td>$1460 $2920 $4380</td>
<td>Bupropion $360</td>
</tr>
</tbody>
</table>

SUMMARY

- MD involvement improves cessation efforts and reduced morbidity and mortality
- Minimal effort by MD yields significant results
- Discuss with ALL patients, particularly adolescents
- Support, don’t condemn or scare