

# SMOKING CESSATION



## PHYSICIAN INTERVENTION

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# OUTLINE

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



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



## 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



## *Demographics*

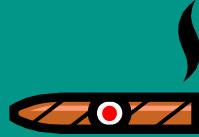
- Since 1965 prevalence has declined by 0.5-1.0% annually
- Prevalence is inversely related to education, SES
- Prevalence greater in Minority groups and Men
- Incidence is steadily increasing in both Women and adolescents

*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

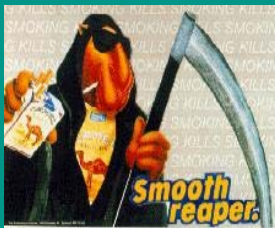


## Does Taxation decrease Representation? ...YES !!!

- 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

Am J Prev Med 2001 Feb;20(2 Suppl):10-5.

*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

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- 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



You've come a long way, baby.

## 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"*

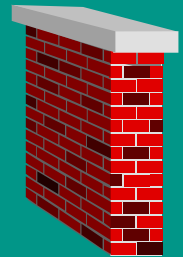
- *Filter tipped cigarettes-95%*
- *Lower tar/nicotine-55%*
  - *Only reduces rate of lung and laryngeal cancers not other tobacco related disease entities*
  - *and the rate of reduction is minimal compared to that of quitting*
- *Because of nicotine dependence smokers adapted their smoking use: deeper 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 > 6mos
- Abrupt or "cold turkey" quitters are more successful than "gradual reducers"
- Less than 8% of "solo 1st 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)
- Anxiety
- Dysphoria
- Impaired concentration
- Depressed mood
- Increased appetite
- Insomnia
- Weight gain
- Agitation

## 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

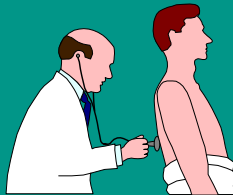
## What is the role of the Doctor?

- 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

U.S. Department of Health and Human Services, Public Health Services. Treating tobacco use and dependence. Rockville (MD): U.S. Department of Health and Human Services, Public Health Service; 2000 Jun. 197

- 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.

Heatherton, T. F., Kozlowski, L. T., Frecker, R. C., Fagerstrom, K. O. (1991). The Fagerstrom Test for Nicotine Dependence: A revision of the Fagerstrom Tolerance Questionnaire. *British Journal of Addictions*, 86, 1119-1127.

## 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
- Highest rates of dependency
- 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

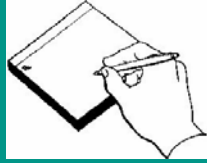
- **Increasing evidence of efficacy**
- **High Fagerstrom smokers**
- **Failure with single therapy**

## 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

## ANXIOLYTICS 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

Annual Cost of Smoking: (increasing)

Price/pack	Packs per day:		
	1/2	1	2
\$1	\$182	\$365	\$730
<b>\$6</b>	<b>\$1092</b>	<b>\$2190</b>	<b>\$4380</b>

Cost of Treatment: \* (stable/decreasing)

Nicotine gum \$230  
 Nicotine patch \$220  
 Nicotine nasal spray \$280  
 Bupropion \$360

\* 8week treatment course

## 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