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Smoking among persons living with HIV/AIDS: Health consequences and treatment approaches

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Learning Objectives

1. Describe to patients the health-risks associated with cigarette smoking for individuals living with HIV/AIDS in order to encourage them to stop smoking.
2. Successfully screen for current smoking in order to arrange for appropriate smoking cessation treatment.

Overview

- Magnitude of the Problem
- Health Risks Associated with Cigarette Smoking and HIV/AIDS
- Previous and Ongoing Smoking Cessation Research
- Next Steps and Future Directions for Research
- Smoking Cessation Treatments

Magnitude of the Problem

HIV/AIDS Trends

- Approximately 1.2 million people in the US are currently living with HIV/AIDS
- More than 50,000 individuals are infected each year
  - 56,300 new cases in 2006
- Sexual contact is the most common transmission category
  - MSM and heterosexual contact - most common transmission categories
  - Increasing incidence among men who have sex with men
- Minority groups comprise a disproportionately large number of HIV/AIDS cases

CDC. *HIV/AIDS Surveillance Report, 2007*
Hall et al., JAMA 2008

HIV/AIDS Mortality

- The introduction of combination antiretroviral therapy has dramatically increased life expectancy for individuals living with HIV/AIDS
  - For an individual with an AIDS diagnosis life expectancy approaches 15 years
  - For an individual with newly diagnosed HIV, life expectancy can exceed 35 additional years
- Given the current trends, the number of people living with HIV/AIDS will continue to grow

Palella et al., N Engl J Med 1998
Walensky et al., J Infect Dis 2006
Lohse N et al., Ann Intern Med 2007

Cigarette Smoking in the U.S.

- More than 45 million adults in the US smoke
  - 70% of current smokers want to quit
- Leading cause of preventable morbidity and mortality
  - 433,000 deaths each year in the US
  - $96 billion in medical care costs each year, $97 billion in productivity losses
  - 1 in 5 deaths attributable to smoking
  - 1 in 3 cancer deaths attributable to smoking
- Prevalence of current smoking in the overall US population is 19.8%

Fiore et al., *Treating Tobacco Use and Dependence: 2008 Update* 2008
CDC, MMWR 2008
American Cancer Society. *Cancer Facts and Figures 2007*

Cigarette Smoking in the US subgroup breakdown

- Sex:
  - 22.3% in men
  - 17.4% in women
- Racial/ethnic identity:
  - Asians - 9.6%
  - Hispanics - 13.3%
  - American Indians/Alaska Natives - 36.4%
  - non-Hispanic blacks - 19.8%
  - non-Hispanic whites - 21.4%
- Level of education:
  - GED - 44.0%
  - 9--11 years of education - 33.3%
- Income:
  - Below the federal poverty level - 28.8%
  - At or above this level (20.3%)

CDC, MMWR 2008

HIV/AIDS and Smoking

- Prevalence of smoking among persons living with HIV/AIDS is dramatically elevated, 45-65%
- Potential reasons:
  - Age distribution
  - SES
  - Depressive symptoms
  - Sexual orientation
  - Drug and/or alcohol use
- Numerous adverse health consequences

Gritz et al., Nicotine Tob Res 2004
Burkhalter et al., Nicotine Tob Res 2005
Mamary EM et al., AIDS Patient Care STDS 2002

Health Risks Associated with Cigarette Smoking and HIV/AIDS

Adverse Health Effects of Smoking Among Persons Living with HIV/AIDS

- People with HIV/AIDS who smoke are at elevated risk for numerous adverse outcomes
  - oral diseases
  - lung diseases
  - heart disease
  - cancer
- Response to antiretroviral treatment (both virologic and immunologic) may be related to smoking status
- People living with HIV/AIDS who smoke have a significantly elevated risk of mortality compared to non-smokers

Lewden C et al., Int J Epidemiol 2005
Feldman et al., Am J Public Health 2006

Cardiovascular Disease

- Extended life expectancy increases the risk of CVD for individuals living with HIV/AIDS
- CVD risk factors associated with HIV/AIDS treatment: cholesterol, triglycerides, body fat distribution, insulin resistance, & diabetes
  - As a result, the number of cases of CVD observed in this population has grown in recent years
- Research indicates that while antiretroviral treatment may be associated with risk of metabolic syndrome, traditional factors (such as cigarette smoking) are more important
- Recent findings from a large international HIV/AIDS study indicate:
  1. CVD is more common among smokers as compared to nonsmokers
  2. CVD-related deaths are more common among smokers as compared to nonsmokers

Sax & Kumar, J Acquir Immune Defic Syndr 2004
Sackoff et al., Ann Intern Med 2006
Mondy & Tebas, Annu Rev Med 2007
Smith et al., CROI annual meeting, Montreal 2009

HIV/AIDS and Cancer

- Cancer is among the leading causes of death for individuals living with HIV/AIDS
- Smoking related cancers that are observed significantly more often among persons living with HIV/AIDS include the following:
  - Anal
  - Cervical
  - Liver
  - Head and neck
  - Lung

Clifford et al., J Natl Cancer Inst 2005
Bonnet F et al., Cancer 2004
Smith et al., CROI annual meeting, Montreal 2009

HIV/AIDS & Non-AIDS Defining Cancers

- Increasing incidence of non-AIDS defining cancers since the introduction of combination antiretroviral therapy
- Mortality due to non-AIDS defining malignancies (such as lung cancer) is more common than death due to AIDS defining malignancies
  - non-AIDS cancers are more common among smokers as compared to nonsmokers
  - non-AIDS cancer-related deaths are more common among smokers as compared to nonsmokers
- While the elevated prevalence of smoking is a contributing factor, lung cancer risk remains significantly elevated after controlling for smoking *(suggesting a smoking/HIV interaction)*

Bonnet F et al., Cancer 2004
Monforte et al., CROI, Los Angeles 2007
Kirk et al., Clin Infect Dis 2007
Smith et al., CROI annual meeting, Montreal 2009

Previous and Ongoing Smoking Cessation Research

An Innovative Telephone Intervention for HIV+ Smokers

Pilot Study:

1. To compare a Cell Phone Intervention (CPI) to a Recommended Standard of Care (RSOC) treatment for smoking cessation
2. To assess the potential mechanisms (e.g., distress, social support, and self-efficacy) of the CPI

Vidrine et al., AIDS Patient Care & STDS (2007).

Design

- Two-group randomized design comparing a Cell Phone Intervention (CPI) to a Recommended Standard of Care (RSOC) control group
- **RSOC** - brief provider advice to quit and targeted written materials
- **CPI** - cellular phone delivered counseling intervention in addition to the RSOC components (brief provider advice and targeted written materials)

Vidrine et al., AIDS Patient Care & STDS (2007).

Smoking status at 3 months

Outcome	CPI (n=38)	RSOC (n=39)	Odds Ratio (95% Confidence Interval)	p-value
Smoking status at follow-up, %(n)				
Point prevalence	36.8 (14)	10.3 (4)	4.8 (1.7, 16.5)	.013
Sustained abstinence	21.1 (8)	7.7 (3)	2.9 (0.7, 12.2)	.138
Quit Attempt, %(n)	97.4 (37)	74.4 (29)	13.9 (1.7, 116.2)	.015
Longest Period of abstinence in days, mean (SD)	30.8 (31.8)	12.3 (19.7)	**Regression Coefficient (95% Confidence Interval)** 18.0 (5.9, 29.9)	.004

Vidrine et al., AIDS Patient Care & STDS (2007).

Conclusions

- Individuals living with HIV/AIDS are receptive to cessation treatment
- The CPI is a feasible treatment modality
- Results suggested that the CPI is an efficacious treatment approach, resulting in:
  - Increased quit attempts
  - Increased abstinence length
  - Increased point-prevalence abstinence
- Changes in depression, anxiety, and self-efficacy mediate the effect of the CPI
- Length of smoking abstinence is significantly associated with HIV-related symptom burden

Vidrine et al., AIDS Patient Care & STDS (2007).

Past & Ongoing Research at Other Sites

- Few efforts to assess smoking cessation treatment in HIV positive populations appear in the literature
  - Pilot of a peer-led counseling intervention compared to a self-help group (Wewers et al, 2000)
  - Australian trial - delivery of an efficacious treatment consisting of counseling and nicotine replacement therapy (NRT) (Cummins et al., 2005)
  - Swiss trial demonstrated that an intervention consisting of counseling and NRT is feasible in a clinic setting (Elzi, 2006)
  - Motivational interviewing and NRT for HIV positive smokers (Niaura,PI: Brown University)
- Trials currently underway
  - Individual counseling, computer-based counseling, and a self-help publication (Humfleet, PI: UCSF)

Positive Paths – Brown University

All participants

- Physician advice to quit
- 8 week supply of NRT patches (if quit date set)

Standard of Care (SC) Group	Motivationally Enhanced (ME) Group
2 brief (2-3 minute) smoking cessation sessions	4 extensive smoking cessation sessions
• Discussion of quit plan • Self help materials	• Motivational interviewing techniques • Feedback with CO measures • Call on their quit day

Findings:

- No difference in abstinence levels at 6 month follow-up between the two groups
- Not using NRT-patch predicted failure to quit smoking
- Hispanic-Americans more likely to quit in both groups as compared to European-Americans and African-Americans
- Behavioral measures associated with quitting (among NRT-patch users)
  - High self-efficacy
  - Positive change in decisional balance
  - Increase in social support network

Tashima K et al., CROI annual meeting, Montreal 2009

Next Steps and Future Directions for Research

Smoking Cessation Treatments

The 5 A's for Treating Tobacco Use and Dependence

1. Ask
2. Advise
3. Assess
4. Assist
5. Arrange

Fiore et al., *Treating Tobacco Use and Dependence: 2008 Update* 2008

Ask

- Identify and document tobacco use status for every patient at every visit:

Initial Assessment of Smoking History, Current Smoking Status & Related Behaviors:

- Have you smoked at least 100 cigarettes in your entire life?
- Do you currently smoke cigarettes?
- For how many years did you smoke regularly?
- If you do not currently smoke cigarettes but did in the past, how long has it been since you last smoked regularly (that is, every day or some days?)
- On average, how many cigarettes a day do (or did) you smoke?
- At what age did you begin smoking? Regularly?

Gritz et al., 2007 *ASCO Curriculum Cancer Prevention*

Ask

Initial Assessment of Smoking History, Current Smoking Status & Related Behaviors continued:

- How soon after you wake up do you smoke your first cigarette?
- How many times in the last 12 months have you tried to quit smoking cigarettes and stayed off for at least 24 hours?
- Are you seriously thinking about quitting in the next month? Within the next 6 months?
- Do people in your household smoke in the home?
- Is smoking allowed in your workplace?
- Have you ever used other forms of tobacco? What kinds?
- Do you use other forms of tobacco every day, some days, or not at all?
- If you do not currently use other forms of tobacco but did in the past, how long has it been since you last used these regularly (that is, daily?)

Gritz et al., 2007 *ASCO Curriculum Cancer Prevention*

Advise

- Urge every tobacco user to quit in a clear, strong, and personalized manner
- Highlight the link between poor health outcomes and smoking behavior
- Repeatedly advise smokers to quit smoking at follow-up visits (if need be) within the context of ongoing care
- Avoid "blaming the victim"

Fiore et al., *Treating Tobacco Use and Dependence: 2008 Update* 2008
Gritz et al., 2007 *ASCO Curriculum Cancer Prevention*

Health Benefits

- Besides taking your HIV treatment as prescribed and getting regular follow-up, stopping smoking is the single most important thing you can do to protect your health
- Even after 40 or 50 years of smoking, the body can repair much of the damage caused by smoking once quit
- 8 hours after your last cigarette the level of carbon monoxide in your blood returns to normal
- 24 hours after your last cigarette your risk of having a heart attack begins to go down
- 6-months after quitting, ex-smokers find they feel less anxious and more in control than when they smoked
- 5 years after your last cigarette your risk of dying of lung cancer has been cut in half

American Cancer Society; Reasons to Quit 2008
Adapted From Orleans CT and Angel I, Fox Chase Cancer Center.

Assess

- Determine willingness to make a quit attempt
- Tailor cessation treatment based on readiness to quit smoking

Stages of Change	
Precontemplation	Not considering quitting in the next 6 months
Contemplation	Considering quitting in the next 6 months
Preparation	Ready to quit in the next month; has taken steps to prepare to quit smoking
Action	Quit date and cessation plan implemented
Maintenance	Has not smoked for at least 6 months

Adapted from: Prochaska & DiCelemente 1983
DiClemente, Prochaska et al., 1991
Gritz et al., 2007 *ASCO Curriculum Cancer Prevention*

Assist

BRIEF INTERVENTIONS (≤ 3 minutes)

Not Ready to Quit

- Discuss personal relevance of smoking & benefits to cessation
- Inform of pharmacological methods to assist quitting
- Promote autonomy & *avoid* arguing with the individual
- Provide support & acknowledge difficulty of decision
- Help identify/enlist significant others to provide encouragement & support
- Use empathic listening

Ready to Quit (within next 30 days)

- Help individual set quit date
- Discuss removing tobacco products from environment
- Inform & encourage pharmacological methods to assist quitting
- Urge individual to enlist the help of family and friends
- Help individual anticipate triggers and/or challenges
- Provide supplementary materials (PHS Guideline Resources)

Fiore et al. 2000; Prokhorov et al., 1997
Gritz et al., 2007 *ASCO Curriculum Cancer Prevention*

Assist

First-line pharmacotherapy
▪ **Nicotine Polacrilex (gum):** 2mg & 4mg doses
▪ **Transdermal Nicotine (patch):** 3 strengths (7mg, 14mg & 21mg) 24 hour release
▪ **Nicotine Nasal Spray:** 0.5 mg per spray, 1-2 doses per hour up to 40 per day
▪ **Nicotine Lozenge:** 2mg & 4mg doses; 1 every 1-2 hours
▪ **Nicotine Inhaler:** 4 mg per cartridge, 6 to 16 cartridges per day
▪ **Bupropion SR:** atypical antidepressant
▪ **Varenecline:** selective nicotine receptor partial agonist

Gritz et al., 2007 *ASCO Curriculum Cancer Prevention*

Typical Courses of Pharmacotherapy

- **Nicotine patch**
  - 21 mg patch for 4-6 weeks
  - 14 mg patch for 2 weeks
  - 7 mg patch for 2 weeks
- **Bupropion**
  - 1 week prior to quit day: 150 mgs 1x a day for 3 days (AM)
  - 4 days prior to quit day: 150 mgs 2x a day for 4 days (AM & PM)
  - Quit day: 150 mgs 2x daily for 7-12 weeks
  - Maintenance: 150mg 2x a day for up to 6 months
- **Varenecline:**
  - Day 1 to 3: 0.5 mg 1x daily
  - Day 4 to 7: 0.5 mg 2x daily (AM & PM)
  - Day 8 up to 12 weeks: 1.0 mg 2x daily (AM & PM)

Nicoderm CQ website: www.quittingsmoking.about.com
FDA website: www.fda.gov
Chantix website: www.pfizer.com
Bupropion website: www.bupropion.com

Arrange

- **Follow-up** visit to discuss smoking cessation within 1-2 weeks of chosen quit date
  - Use 5A's at each subsequent visit
  - Discuss slips or relapses and encourage subsequent quit attempts
- **Coordinate** smoking cessation efforts with entire healthcare team
  - Resources for nurses: www.tobaccofreenurses.org
- **Provide** community cessation resources
  - National Telephone quit-line (1-800-QUITNOW)
  - American Cancer Society quit-line (1-800-ACS-2345)
  - Support groups
  - Internet resources (www.cancer.org, www.americanlegacy.org, www.cdc.gov/tobacco)
- **Refer** to psychologist or professionally trained smoking cessation counselor
  - Numerous unsuccessful quit attempts
  - Co-morbid depression, anxiety, other substance abuse
  - Lack of adequate social support network

Gritz et al., 2007 *ASCO Curriculum Cancer Prevention*

Individuals not yet ready to quit

- 5 R's to increase motivation to quit
  1. Relevance
  2. Risks
  3. Rewards
  4. Roadblocks
  5. Repetition

Fiore et al., *Treating Tobacco Use and Dependence: 2008 Update* 2008

Smoking Cessation Counseling

- Cognitive Behavioral Therapy (CBT)
- Motivational Interviewing (MI)

Cognitive Behavioral Therapy

- Type of therapy that targets problematic behaviors and thought patterns
- The primary goal is to promote more rational and balanced ways of thinking and acting:
  - Problem solving
  - Adaptive coping skills
  - Interpersonal skills training

O'Donohue et al., 2003 *Cognitive Behavioral Therapy: Applying Empirically Supported Techniques in Your Practice.*

Using CBT
Day before quit date

- Make a *plan* for the quit day
- Discuss how the individual is going to get rid of cigarettes, ashtrays and lighters
  - Throw them away, smoke the rest of the pack
- Encourage individuals to let friends and family members know of their goal to quit smoking
  - Helps cement quit attempt in the individual's mind
  - Builds social support around individual's quit attempt
- Review A.C.E. Strategies
  - Provides an easy to remember toolkit of skill

O'Donohue et al., 2003 *Cognitive Behavioral Therapy: Applying Empirically Supported Techniques in Your Practice.*

CBT & A.C.E. Strategies

- A-AVOID:
  - Controlling your environment, getting rid of cigarettes, ashtrays and lighters
  - Avoiding situations you are not yet ready to handle, smoke filled bars
- C-COPE:
  - Finding healthy ways to deal with cravings and urges
    - Going for a walk, calling a friend, reviewing your reasons for quitting
  - Engaging in activities which inhibit your ability to smoke
    - Doing the dishes, taking a shower, chewing gum, drinking a glass of water
- E-ESCAPE:
  - Realizing you might be put in situations where you are tempted to smoke and having the skills to remove yourself from those situations
    - At a friend's house who smokes and they light up
    - At a bus stop and someone lights up

Tsoh et al., Beh Med 1997

Motivational Interviewing

- MI is focused on understanding the individual's point of view with the goal of increasing motivation to make desired changes in his/her life
- This type of treatment considers that individuals have different levels of readiness to change, and experience ambivalence towards change:
  - Empathy
  - Reflective listening
  - Develop discrepancy
  - Avoid argument

Rollnick et al., Behav Cogn Psychother 1995

MI Guiding Principles

- Collaboration: between the client and the provider
- Autonomy: the client (not the provider) is responsible for change
- Evocation: elicit solutions from the client
  - "How do you feel about this?"
  - "How does this work for you?"
- Embracing ambivalence:
  - Acknowledging there might be both pros and costs to making change
  - Roll with resistance
- Reflective listening:
  - Restate concerns
  - Let the client know you are hearing them
  - Make sure you are hearing the client correctly
- Empathy!
  - Making changes is a difficult process

Rollnick et al., Behav Cogn Psychother 1995

CBT and MI

- CBT – provides the smoker with a plan and tools to be successful in their quit attempt
- MI – takes the time to listen and reflect barriers and accomplishments of the quitting process
- Typically most former smokers find that multiple attempts are necessary to quit, learn from past attempt
- Smoking cessation counseling and NRT work best when combined
- No Magic bullet

Thank you!

Questions?