

At the Intersection of Smoking, HIV/AIDS and Cancer

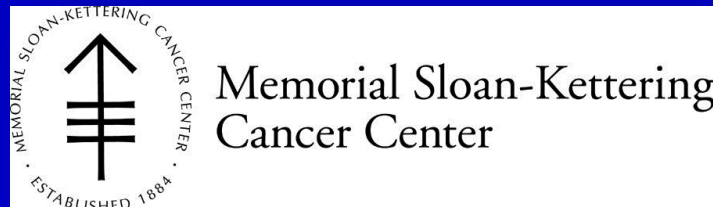
The 8th Annual Texas Conference on Health Disparities
May 30-31, 2013

Jack Burkhalter, Ph.D.

Assistant Attending Psychologist

Assistant Director, Tobacco Cessation Program

Department of Psychiatry & Behavioral Sciences







in·ter·sec·tion, noun

[Latin *intersectus* past participle of *intersecāre*, to cut through, sever]

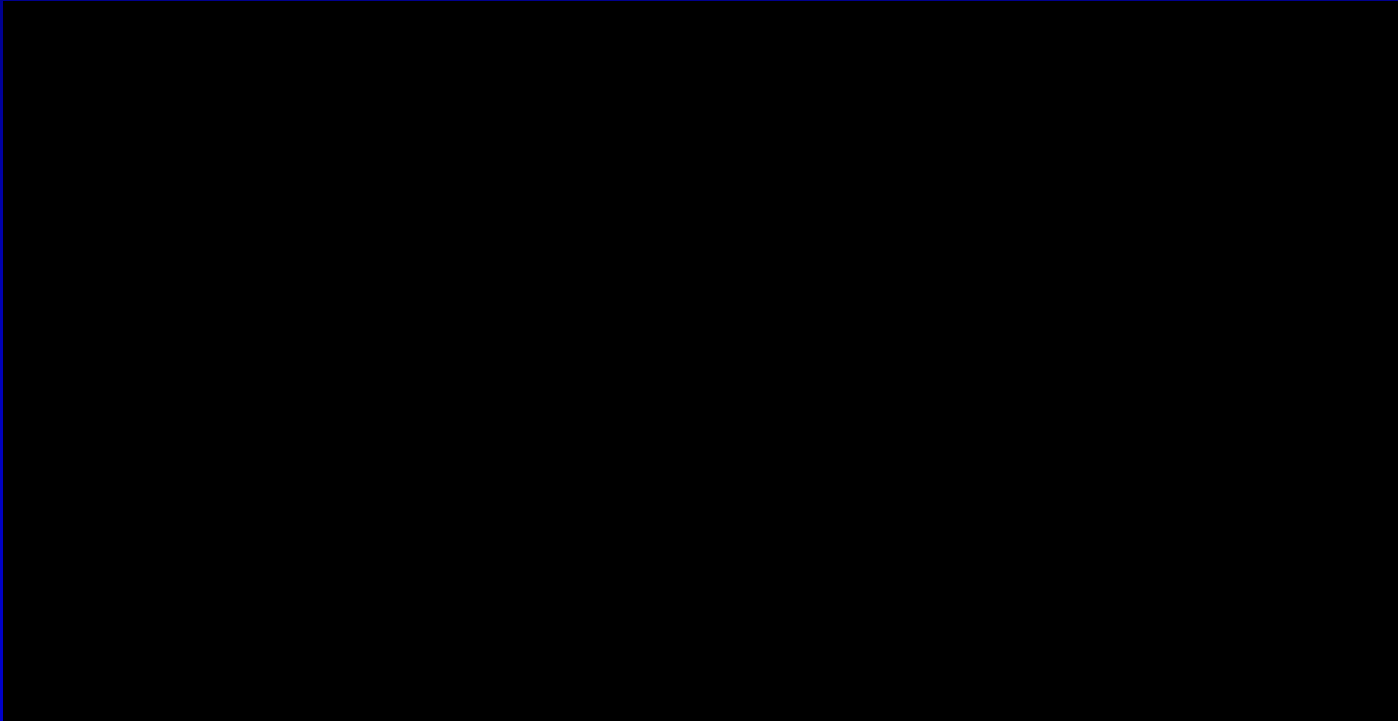
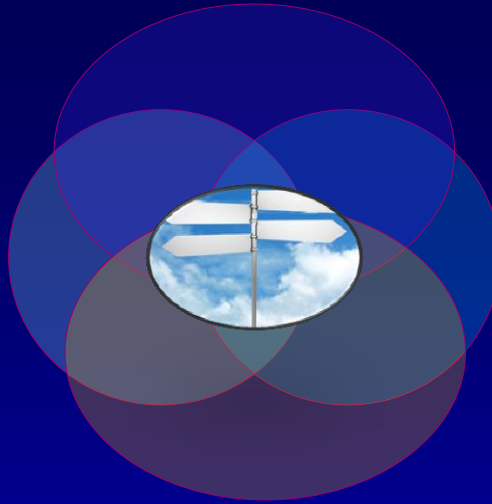
1. a place where two or more roads meet, especially when at least one is a major highway; junction.
2. any place of intersection or the act or fact of intersecting.
3. Mathematics . a. Also called **meet**, **product**. the **set** of elements that two or more sets have in common. Symbol: \cap (cap)



[]

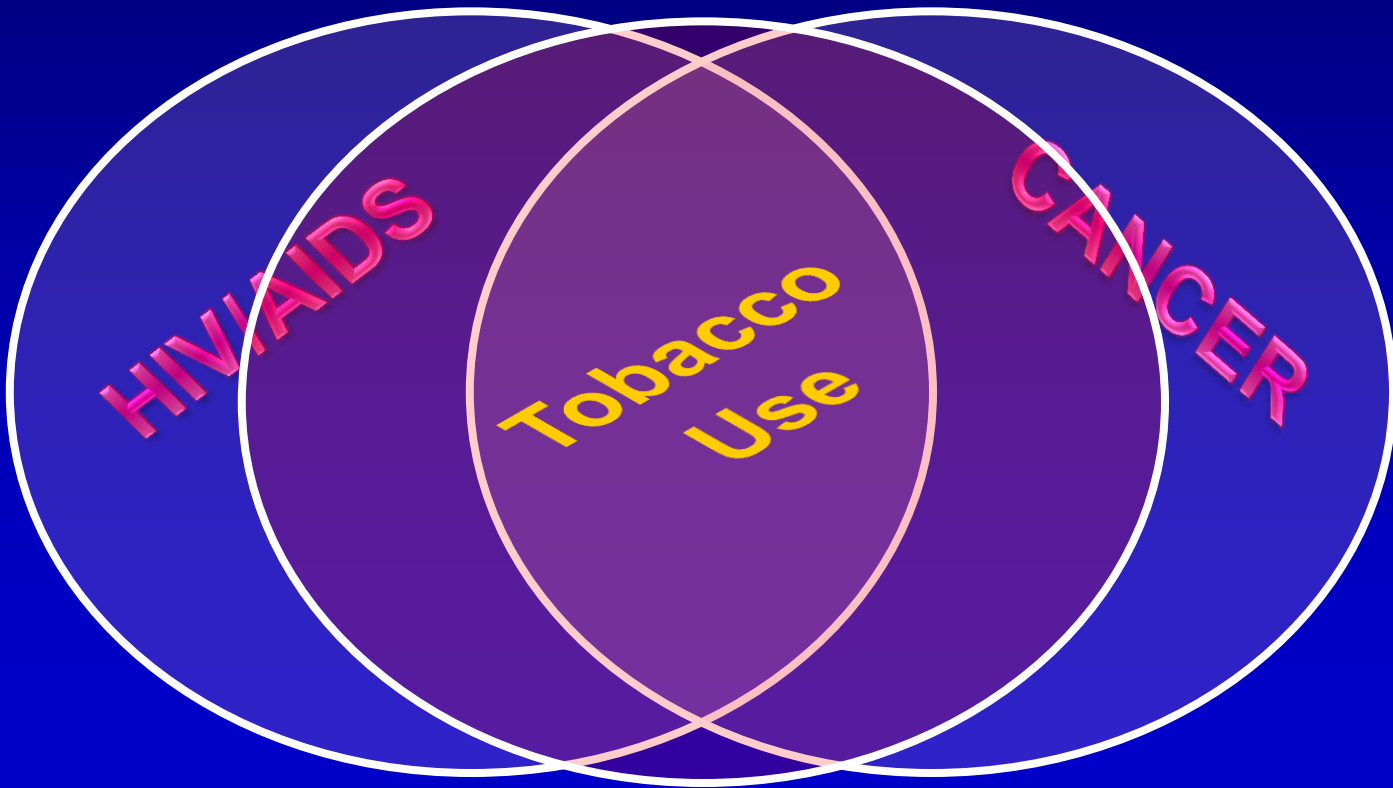


RED

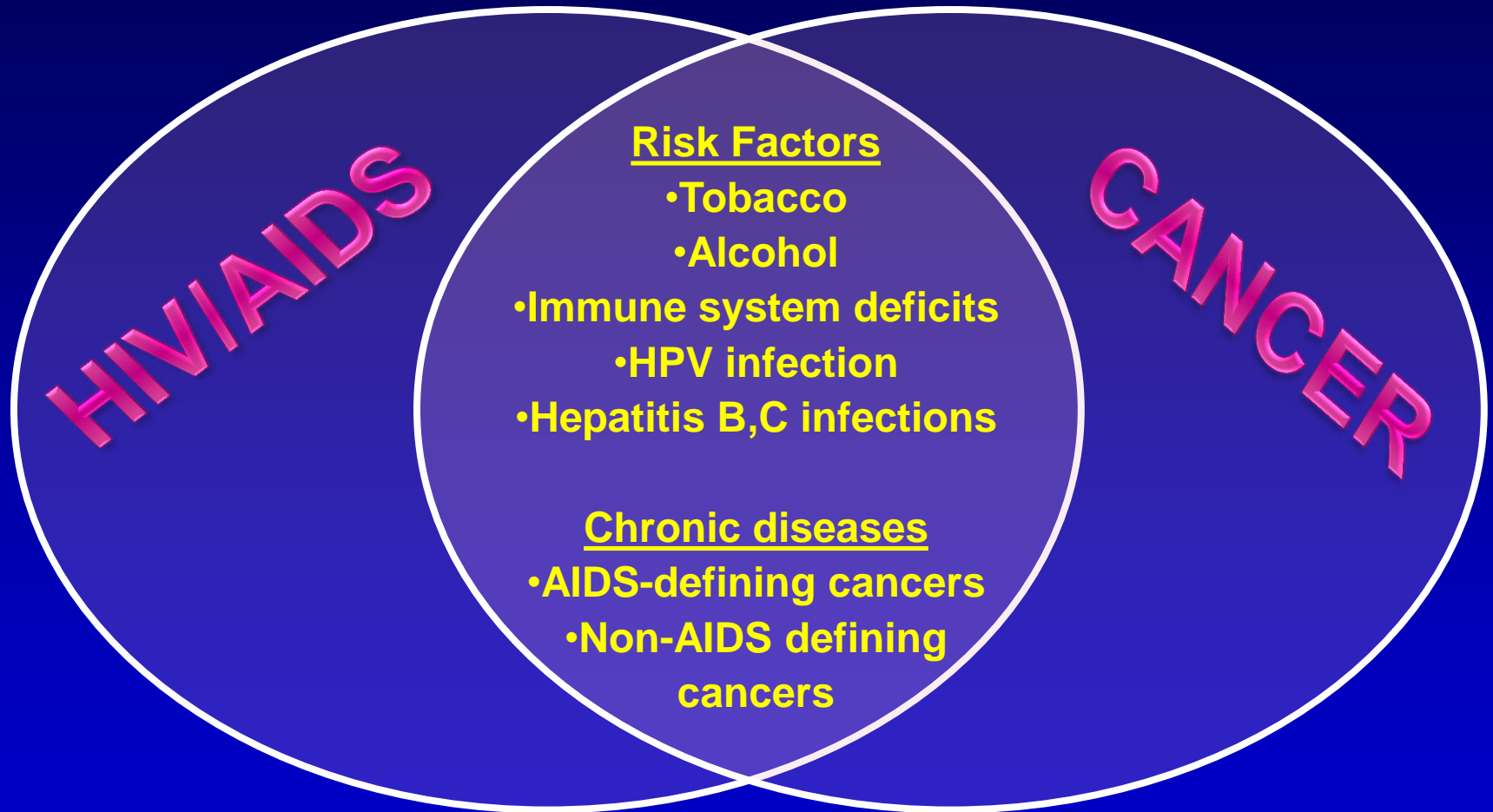


What do we know about this intersection?

- Prevalence of many cancers in HIV/AIDS is higher
- Prevalence of tobacco use in HIV/AIDS is markedly high → increased cancer risk
- PLWHA are living longer & with better QoL, but they can ill afford to use tobacco



At the Intersection



← Disease Continuum →

Prevention

Detection/Screening

Treatment

Living with/Surviving

End of Life

Prevalence of smoking in the U.S.

Population	Prevalence
U.S. General ¹	19.3%
Females	17.3%
Males	21.5%
U.S. Medicaid patients ²	31.0%
HIV+ National samples ³	45-51%
HIV+ Outpatient clinics ⁴	47-72%
Texas general population ²	17.9%

Sources: ¹CDC, 2010; ²CDC, 2012; ³Collins et al., 2001; Turner et al., 2001; ⁴Gritz, et al., 2004; Mamary, et al., 2002; Nahvi & Cooperman, 2009; Niaura et al., 1999; ⁵Burkhalter et al., 2005; ⁶Tesoriero et al. 2010

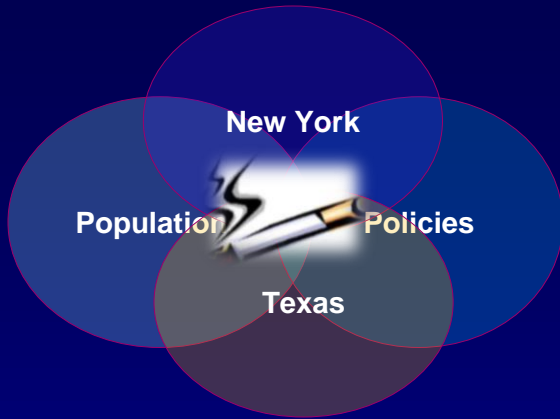
Racial and Ethnic Smoking Disparities

Race/Ethnicity	Males %	Females %	Total %
White non-Hispanic	22.6	19.6	21.0
Black, non-Hispanic	24.8	17.1	20.6
Hispanic	15.8	9.0	12.5
American Indian/Alaska Native	---*	---*	31.4
Asian, non-Hispanic	14.7	4.3	9.2
Multiple race, non-Hispanic	28.4	23.8	25.9

Source: CDC, 2011. Vital Signs: Current Cigarette Smoking Among Adults Aged ≥ 18 Years --- United States, 2005--2010

*Data not reported because relative standard error $\geq 30\%$

Texas and New York: A Tale of Tobacco & Two States

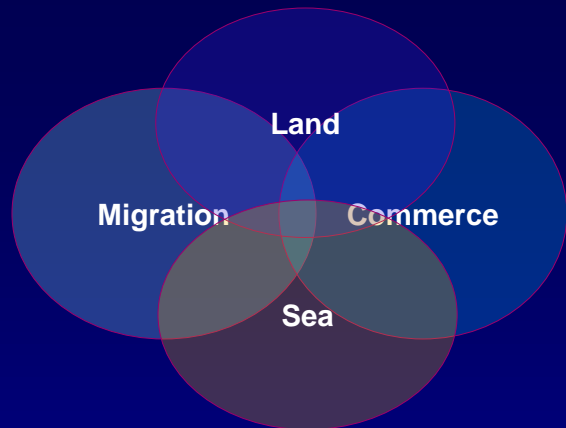


State	Prevalence (rank)	Pack Price (rank)	Work Ban	Bar Ban	Restaurant Ban
New York	17.9% (25 th)	\$8.97 (1 st)	Yes	Yes	Yes
Texas	17.9% (27 th)	\$5.47 (36 th)	No	No	No
Utah	9.8% (51 st)	\$5.70 (17 th)	Yes	Yes	Yes
Kentucky	25.6% (1 st)	\$4.55 (40 th)	No	No	No

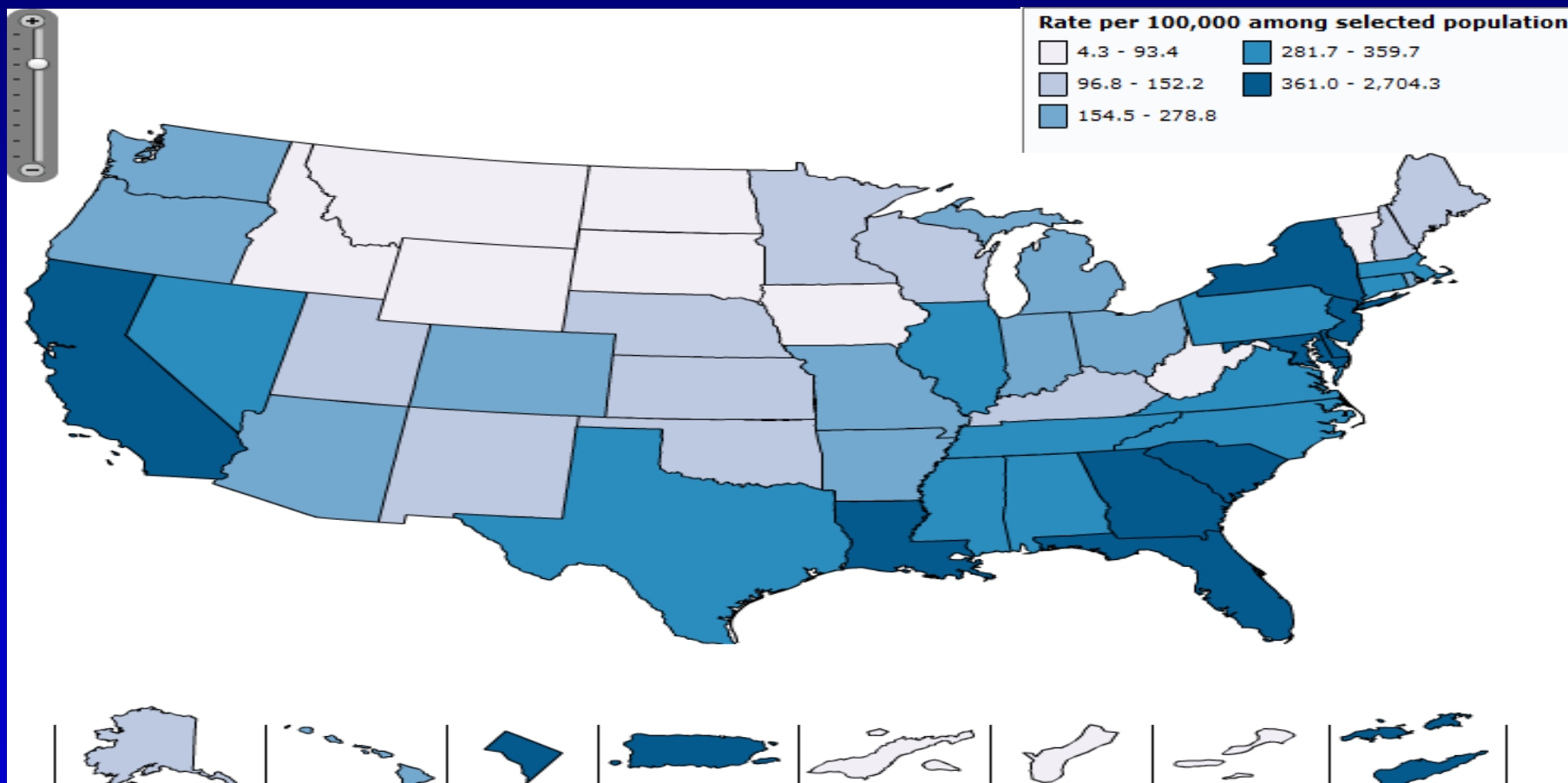
U.S./State	% Population Latino	% Population Asian	% Population Black
U.S.	16.7%	5.0%	13.1%
Texas	38.1%	4.0%	12.2%
New York	18.0%	7.8%	17.5%



HIV/AIDS

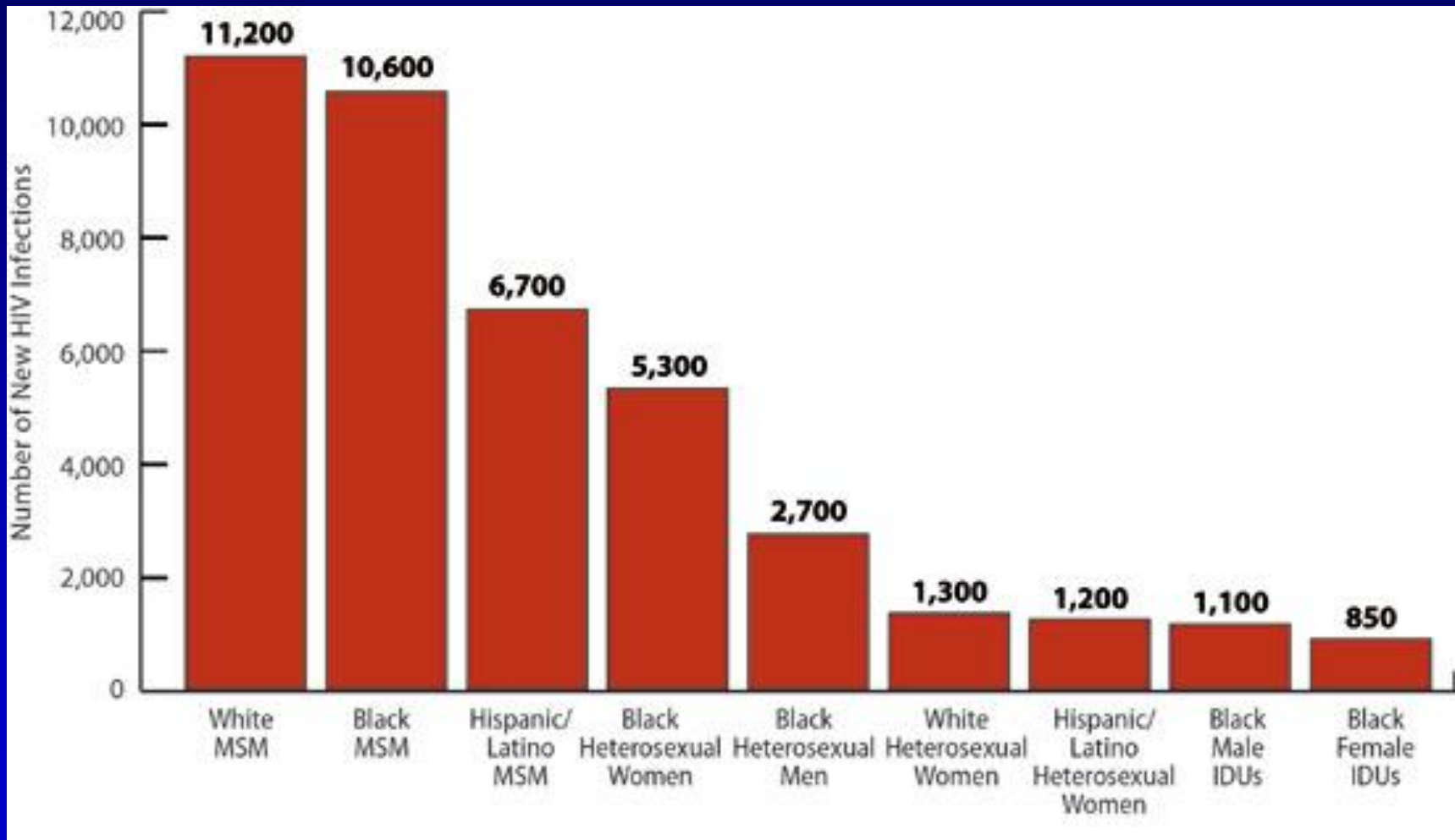


Rates of HIV infection



HIV/AIDS Disparities

Estimated New HIV Infections in the United States, 2010, for the Most Affected Subpopulations



Source: CDC. Estimated HIV incidence in the United States, 2007–2010. HIV Surveillance Supplemental Report 2012;17(No. 4). http://www.cdc.gov/hiv/surveillance/resources/reports/2010supp_vol17no4/. Published December 2012.

Racial, Ethnic, and Sexual Minority Disparities in HIV/AIDS

Minority Group	% Population	% New HIV infections	% PLWHA
Black	12%	44%	44%
Hispanic	16%	21%	19%
MSM (men who have sex with men)	4%	63%	52%

Greatest number of new infections was:

- **Black MSM ages 13-24**, accounting for
- **45% of new HIV infections among black MSM**, and
- **55% of new HIV infections among all young MSM**



Cancer

Poverty,
Exposure

Race

Geography

Health Care
Access

Incidence of Cancer

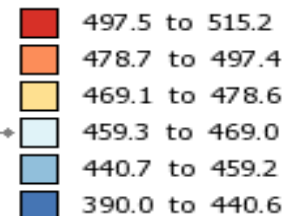
Latest [±] **Incidence Rates** [†] **for United States**

All Cancer Sites

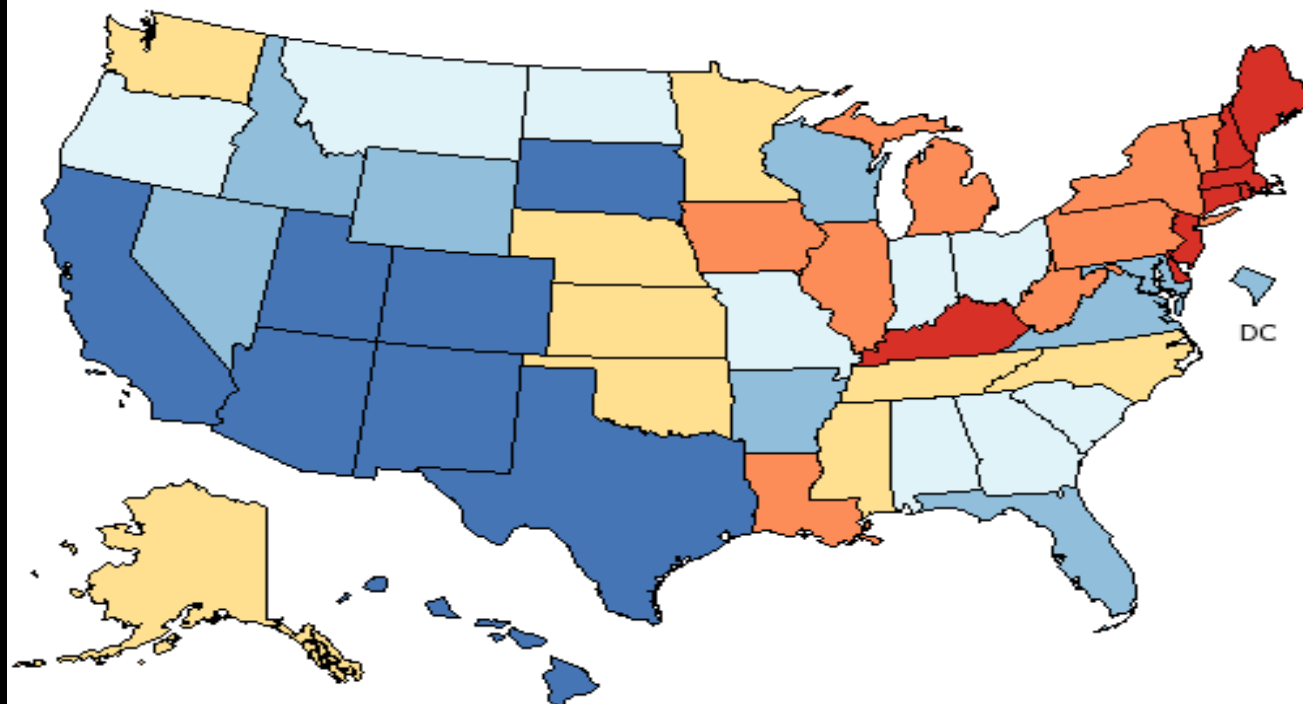
All Races (includes Hispanic), Both Sexes, All Ages
2005-2009 (Wisconsin 2005-2008)

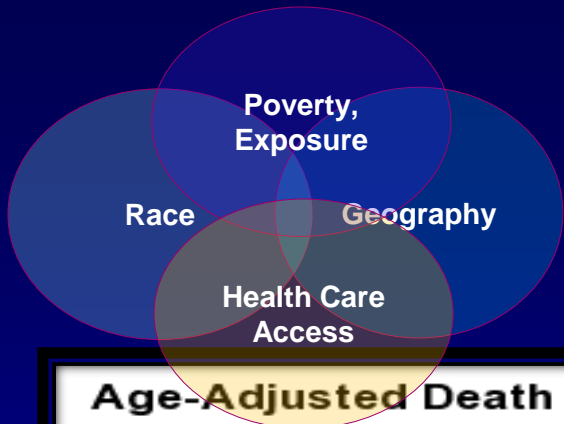
Age-Adjusted
Annual Incidence Rate
(Cases per 100,000)

Quantile Interval



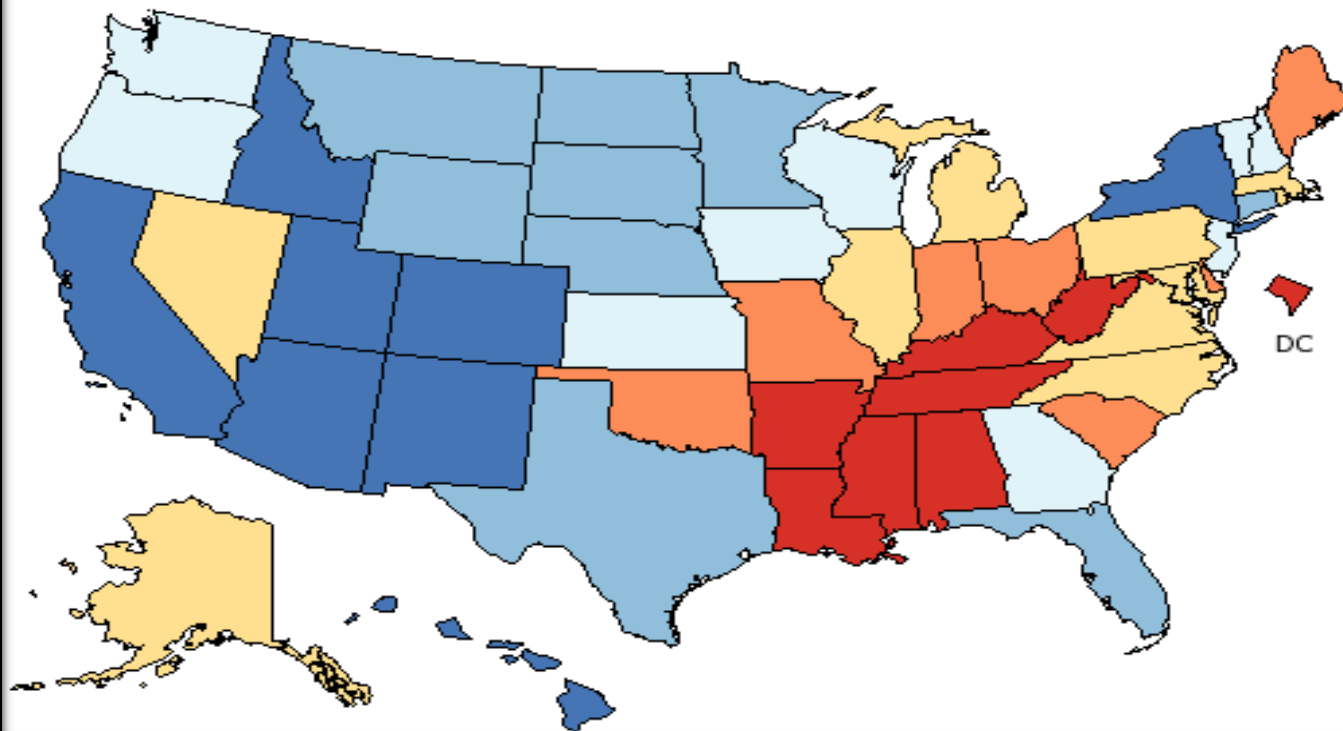
US (SEER + NPCR)
Rate (95% C.I.)
465.0 (464.7 - 465.4)





Cancer Death Rates

Age-Adjusted Death Rates for United States, 2005 - 2009
All Cancer Sites
All Races (includes Hispanic), Both Sexes, All Ages



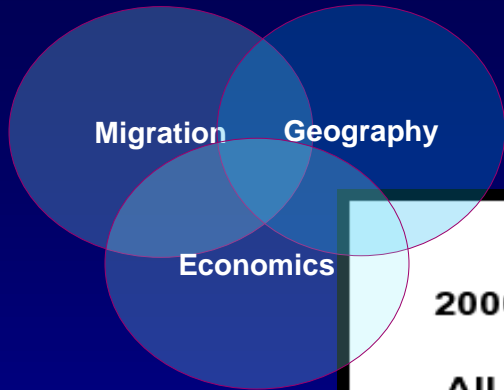
Age-Adjusted
 Annual Death Rate
 (Deaths per 100,000)

Quantile Interval

- 195.5 to 211.3
- 187.6 to 195.4
- 179.9 to 187.5
- 174.1 to 179.8
- 166.8 to 174.0
- 128.4 to 166.7

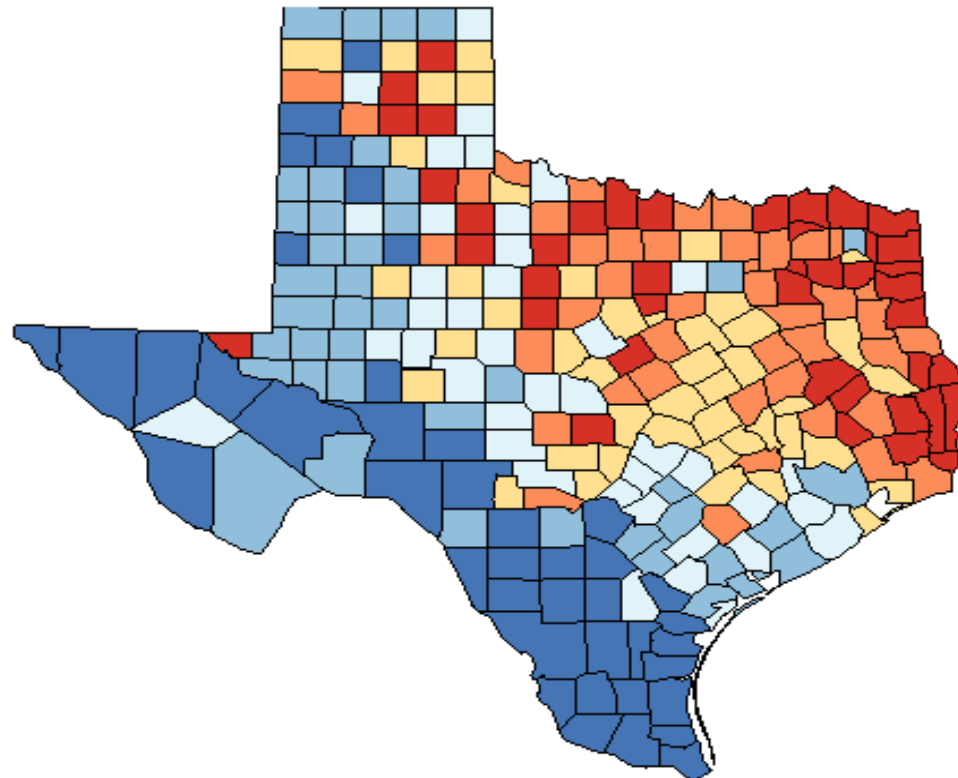
United States
 Rate (95% C.I.)
 178.7 (178.4 - 178.9)







Healthy People 2020
 Goal C-1
 160.6



Hispanic Population in Texas

Demographic Data for Texas
2006-2010 American Community Survey 5-Year Data
Population: Hispanic
All Races (includes Hispanic), Both Sexes, All Ages



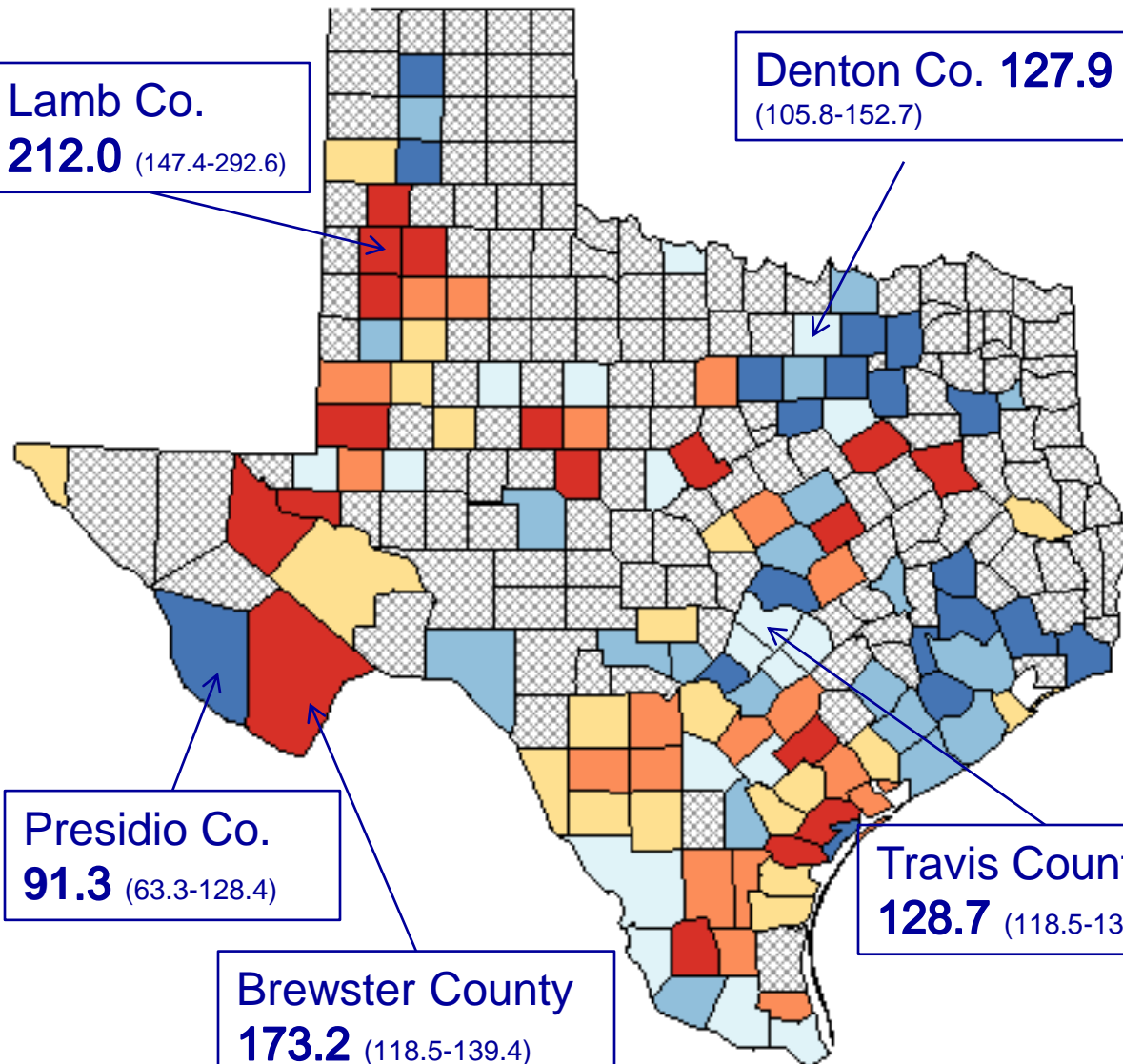
Percent	
Quantile Interval	
	51.6 to 98.3
	35.6 to 51.5
	22.7 to 35.5
	17.1 to 22.6
	10.1 to 17.0
	0.0 to 10.0

Created by statecancerprofiles.cancer.gov on 05/27/2013 12:30 pm.
 Source: Demographic data provided by the [Census Bureau](#) and the [American Community Survey](#).
 For more information about Population: Hispanic see the [dictionary](#).

Age-Adjusted Death Rates for Texas, 2005 - 2009

All Cancer Sites

Hispanic (any race), Both Sexes, All Ages



Age-Adjusted
Annual Death Rate
(Deaths per 100,000)

Quantile Interval

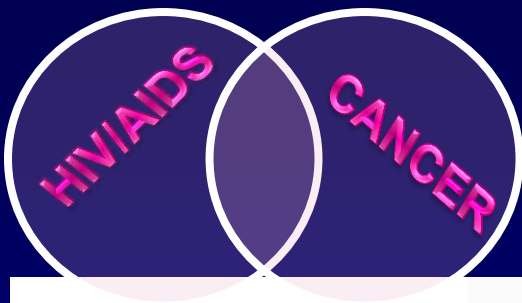
- 166.5 to 355.0
- 149.9 to 166.4
- 139.2 to 149.8
- 123.1 to 139.1
- 111.2 to 123.0
- 75.9 to 111.1

Suppressed*

United States ▼
Rate (95% C.I.)
119.3 (118.7 - 120.0)

Texas
Rate (95% C.I.)
130.0 (128.5 - 131.6)

Healthy People 2020
Goal C-1
160.6



AIDS Malignancy Consortium

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[Administration of Vorinostat Disrupts HIV-1 Latency in Patients on ART](#)

Videos



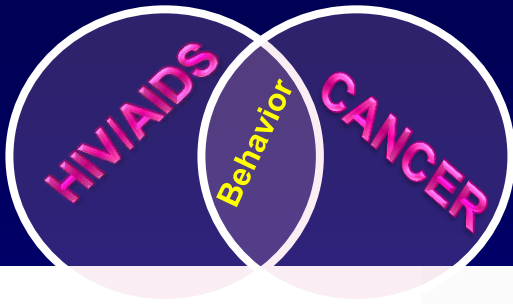
Welcome to Our Website!

The AIDS Malignancy Clinical Trials Consortium (AMC) is a National Cancer Institute-supported clinical trials group founded in 1995 to support innovative trials for AIDS-related cancers. The AMC is composed of over 37 Clinical Trials Sites worldwide, five Working Groups, an Administrative Office, a Statistical Office, and an Operations and Data Management Office. Collectively, these components develop and oversee the scientific agenda, manage the groups' portfolio of clinical trials and other scientific-based studies, and help to develop new protocols.

Four of the working groups deal with the cancers that affect HIV-positive patients—Kaposi's Sarcoma, Lymphoma, Human Papillomavirus-related Cancers (for example, anal and cervical cancers), and Non-AIDS Defining Cancers (for example, lung cancer, head and neck cancer, liver cancer). The Laboratory Working Group oversees the Central Laboratories of the AMC and develops laboratory studies to answer important scientific questions related to cancer in



Dr. Joseph Sparano, Albert Einstein Comprehensive Cancer Center



AMC Behavioral Research Working Group


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 - [Administration of Vorinostat Disrupts HIV-1 Latency in Patients on ART](#)

Videos



Behavioral Research Working Group

Supported through administrative supplements (2011-2012) from the Center to Reduce Cancer Health Disparities (CRCHD) of the National Cancer Institute (NCI), the **Behavioral Research Working Group (BRWG)** was formed in 2011 to coordinate the pilot project research activities of six grantees. The main goal of this supplemental program is to increase participation of diverse under-represented populations (e.g., racial/ethnic groups, low socio-economic status, rural) in AMC clinical trials. The grantee projects have these broad aims: 1) develop and implement interventions for improving accrual and retention of patients from diverse backgrounds to AMC clinical trials; 2) test culturally appropriate behavioral strategies for maximizing the success of interventions, and; 3) maintain interdisciplinary partnerships within cancer health disparities and HIV-related clinical trials research.

The multi-site collaborations are expected to comprise AIDS Malignancy Consortium (AMC) researchers, cancer health disparities (CHD) researchers, and community organizations. Jack Burkhalter, PhD, a behavioral scientist at Memorial Sloan-Kettering Cancer Center, is the current Chair of the BRWG. The grantees of this funding are:



BRWG Members (left to right): Dr. David Aboulafia, Virginia Mason Medical Center; Mr. Jeff Taylor, AMC Community Representative; Dr. Vivian Colon, University of Puerto Rico; Dr. Tracy Battaglia, Boston Medical Center; Dr. Elizabeth Stier, Boston Medical Center; Dr. Heather Goltz, Baylor Medical Center; Dr. Jack E. Burkhalter, Memorial Sloan-Kettering Cancer Center; Dr. Martha L. Hare, NCI Center to Reduce Cancer Health Disparities; Dr. Cathy Melvin, University of North Carolina School of Medicine; Dr. Mostafa Nokta, NCI Office of HIV and AIDS Malignancy; Dr. Rebecca Huppi, NCI Office of HIV and AIDS Malignancy; Dr. Ronald...



Tobacco Use



Cigarette and smoke

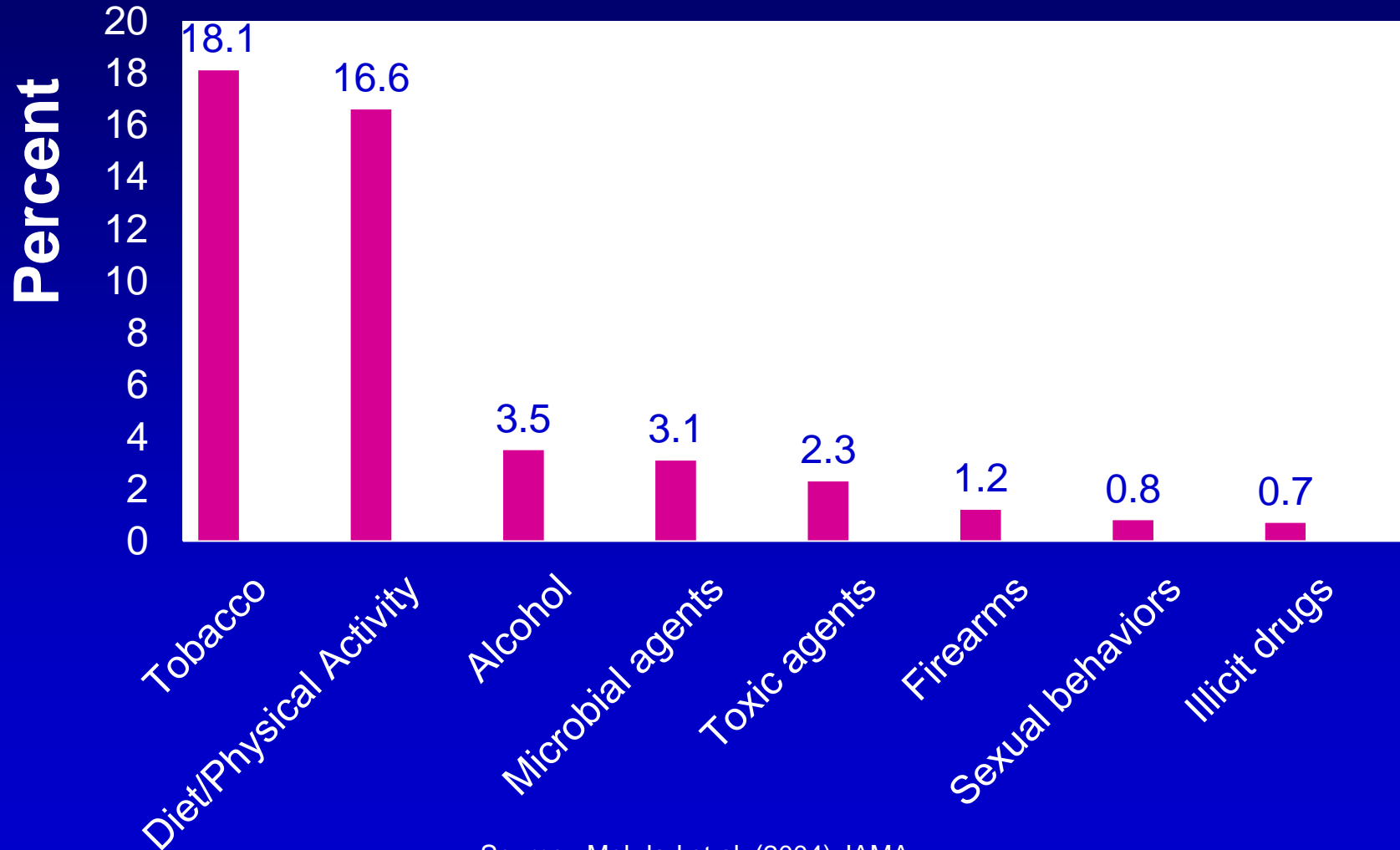
- 4,500 compounds in tobacco and cigarette smoke
- Carcinogens: Nitrosamines, aldehydes, polycyclic aromatic hydrocarbons (PAHs)
- Other toxic agents:
 - Carbon monoxide (CO) → CVD
 - Ammonia, acrolein, acetone, heavy metals, benzopyrines, hydroquinone, nitrogen oxides, et al.
- Nicotine is addictive agent
- Long-term impact of nicotine in humans?

Health Consequences of Smoking

General Population

- **Cancers**
 - Acute myeloid leukemia
 - Bladder and kidney
 - Cervical
 - Esophageal
 - Gastric
 - Laryngeal
 - Lung
 - Oral cavity and pharyngeal
 - Pancreatic
- **Pulmonary diseases**
 - Acute (e.g., pneumonia)
 - Chronic (e.g., COPD)
- **Cardiovascular diseases**
 - Abdominal aortic aneurysm
 - Coronary heart disease
 - Cerebrovascular disease
 - Peripheral arterial disease
- **Reproductive effects**
 - Impaired fertility in women
 - Poor pregnancy outcomes (e.g., low birth weight, preterm delivery)
 - Infant mortality
- **Other adverse health effects**
 - Cataract, osteoporosis, periodontitis, erectile dysfunction

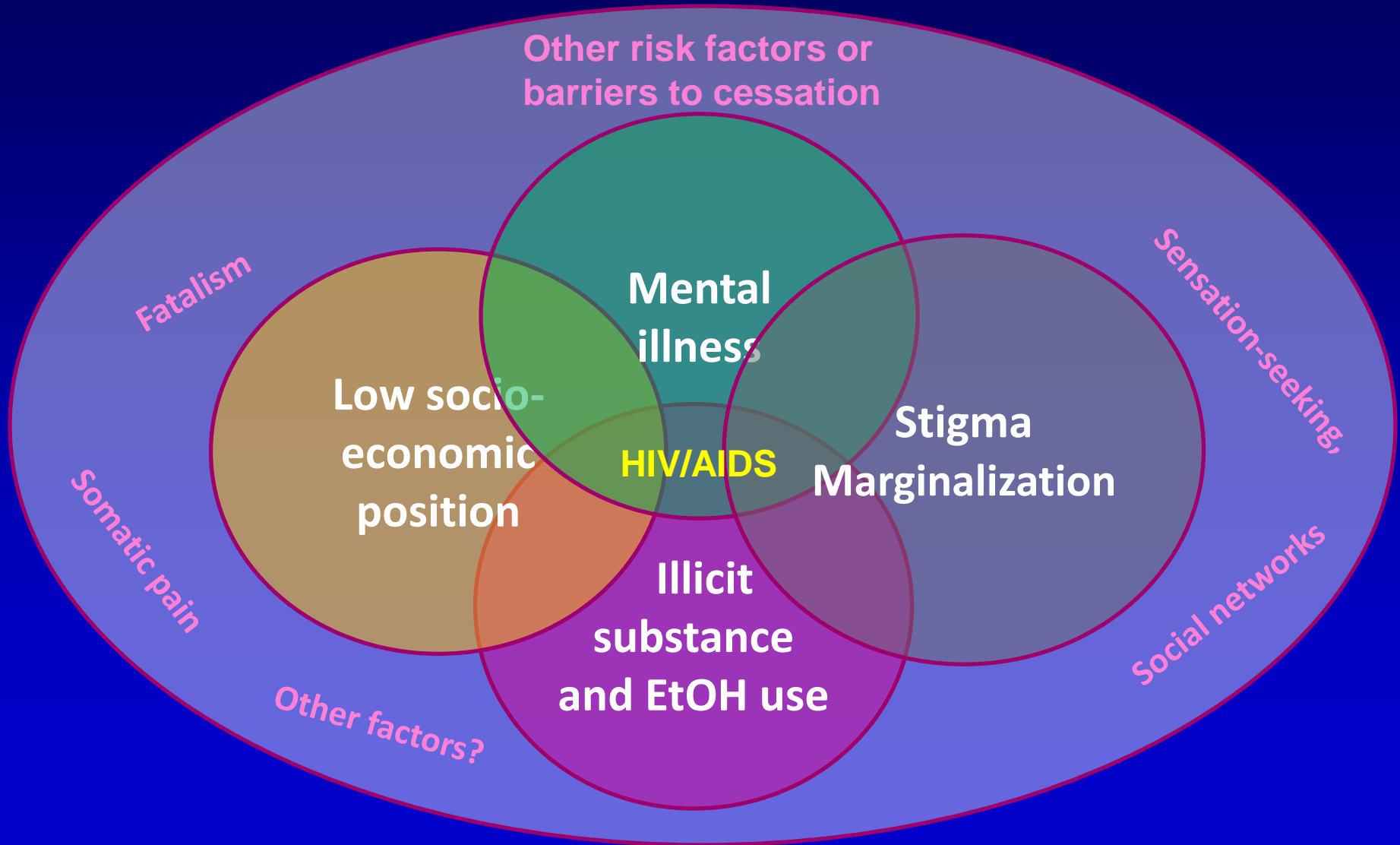
Leading causes of death in U.S. in 2000



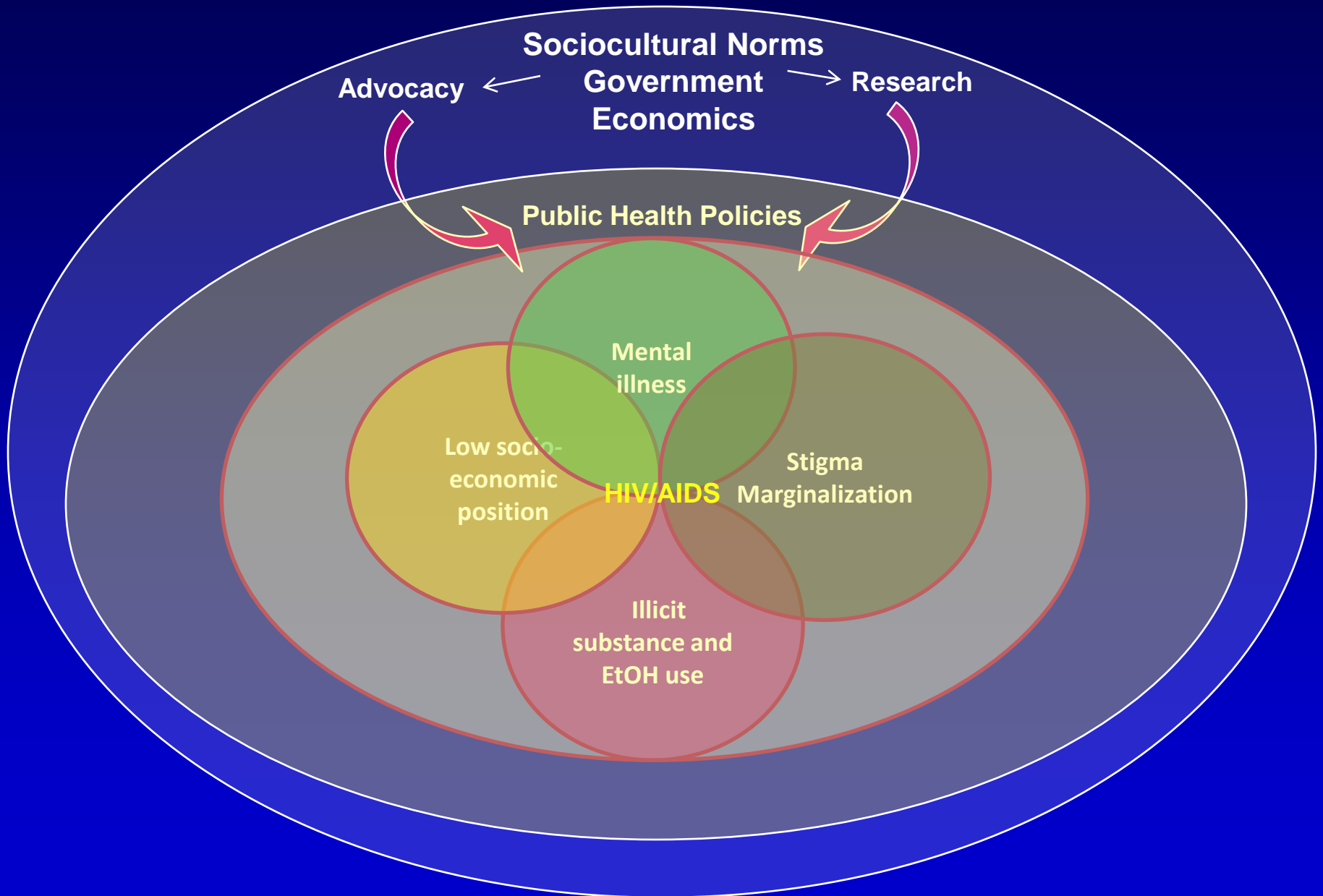
Source: Mokdad et al. (2004) JAMA

Why is smoking so more prevalent among PLWHA?

Concentration of tobacco use risk factors



Meta-level influences on smoking among PLWHA?



HIV/AIDS: Why is tobacco cessation important?

Immune system

Impact of tobacco smoke on:

Innate immunity:

- Increased numbers of alveolar macrophages (AMs) → increased secretion of lysosomes and elastase → damage of connective and parenchymal tissues → emphysema, bronchitis, COPD
- AMs functionally impaired → secrete ↓ levels of pro-inflammatory cytokines → early responses to pathogens, upregulation of local host defenses
- NK cells critical in surveillance of tumor growth; NK cell activity ↓ significantly in in vitro and animal studies; rats exposed to cigarette smoke have increased spontaneous lung tumors

Adaptive immunity:

- Leukocytosis--but with impaired functioning
- Reduced serum levels of immunoglobulins in humans
- ↓ levels of specific antibodies in microbial infections (flu) but ↑ levels of autoantibodies → ↑ risk for certain autoimmune diseases

HIV/AIDS: Why is tobacco cessation important?

Cancer

- Cancer risk increases with age, and PLWHA population is aging¹⁻³
- HIV infection and immune system impairments as independent risk factors⁴⁻⁵
- Since 1998, total cancer burden in AIDS has climbed:⁶
 - Overall incidence of AIDS-defining (ADC) cancers declined
 - Incidence of non-AIDS defining cancers (NADC) increased
 - Anal, Hodgkin lymphoma, liver, lung, prostate
- In HIV+ population, increased cancer risk:⁷⁻⁹
 - Oropharynx, larynx, pancreas, vagina/vulva, penis

HIV/AIDS: Why is tobacco cessation important?

Pulmonary disease and respiratory symptoms

- Dyspnea, wheezing, and pulmonary emphysema exacerbated by smoking are markedly elevated among PLWHA compared to HIV-neg smokers¹⁻³
- Among HIV+ smokers, increased risk for bacterial pneumonia, not PCP⁴
- Permanent declines in pulmonary function after bacterial or PCP pneumonias⁶
- PLWHA report respiratory symptoms as salient health concerns related to smoking and cite improvement in respiratory symptoms as a benefit of smoking cessation⁷

¹Wallace et al., 1997; ²Diaz et al., 2000, ³Diaz et al., 2003; ⁴De et al., 2013; ⁶Morris et al., 2000;

⁷Burkhalter et al., 2005

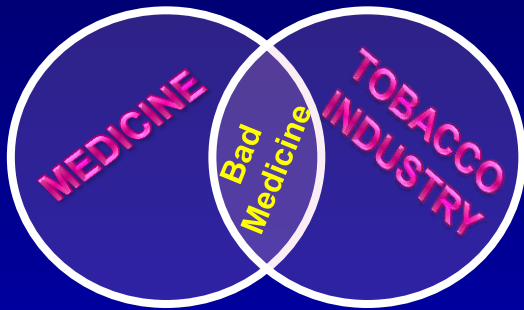
HIV/AIDS: Why is tobacco cessation important?

Cardiovascular disease

- CO believed to be primary culprit in CVD
- In HIV/AIDS, CVD and risk prevalent:
 - Increased acute MI Rates (in women)¹
 - Increased rates of hypertension¹
 - Metabolic abnormalities
 - Dyslipidemia¹⁻³
 - Insulin resistance and diabetes^{1,4}
 - Endothelial dysfunction^{5,6}
 - Altered fat distribution^{2, 7-9}

¹Triant et al., 2007; ²Carr et al., 1998; ³Hadigan et al., 2003; ⁴Brown et al., 2005; ⁵Stein et al., 2001; ⁶Hsue et al., 2004; ⁷Carr et al., 1999; ⁸Hadigan et al., 2001; ⁹Periard et al., 1999; ¹⁰Lichtenstein et al., 2001

Some intersections are dangerous



WHAT DISTINGUISHED DOCTORS FOUND—ON COMPARING CIGARETTES

Full reports in medical journals by men high in their profession—regularly offered to physicians on request.

MANY thousands of America's physicians already possess this authoritative reference material on the leading cigarettes regularly smoked in America. For the public, findings may be summed up as follows:

LABORATORY COMPARISONS:

The four other leading brands were found to average more than three times as irritating . . . with irritant effects lasting more than five times as long . . . as the strikingly

contrasted PHILIP MORRIS.

CLINICAL TESTS (actual smokers)

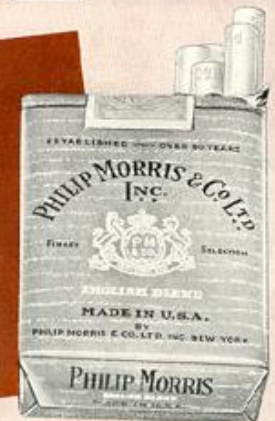
When smokers changed to PHILIP MORRIS, every case of irritation of nose or throat—due to smoking—either cleared up completely, or definitely improved.

TO PHYSICIANS: A set of reports (reprinted) available upon request. Please write on professional letterhead—addressing: Research Division, Philip Morris & Co., 115 Fifth Avenue, New York, N. Y.

Scientific proof that this finer-flavored cigarette is far less irritating—therefore safer—for the smoker's nose and throat!

CALL FOR PHILIP MORRIS

America's Finest Cigarette



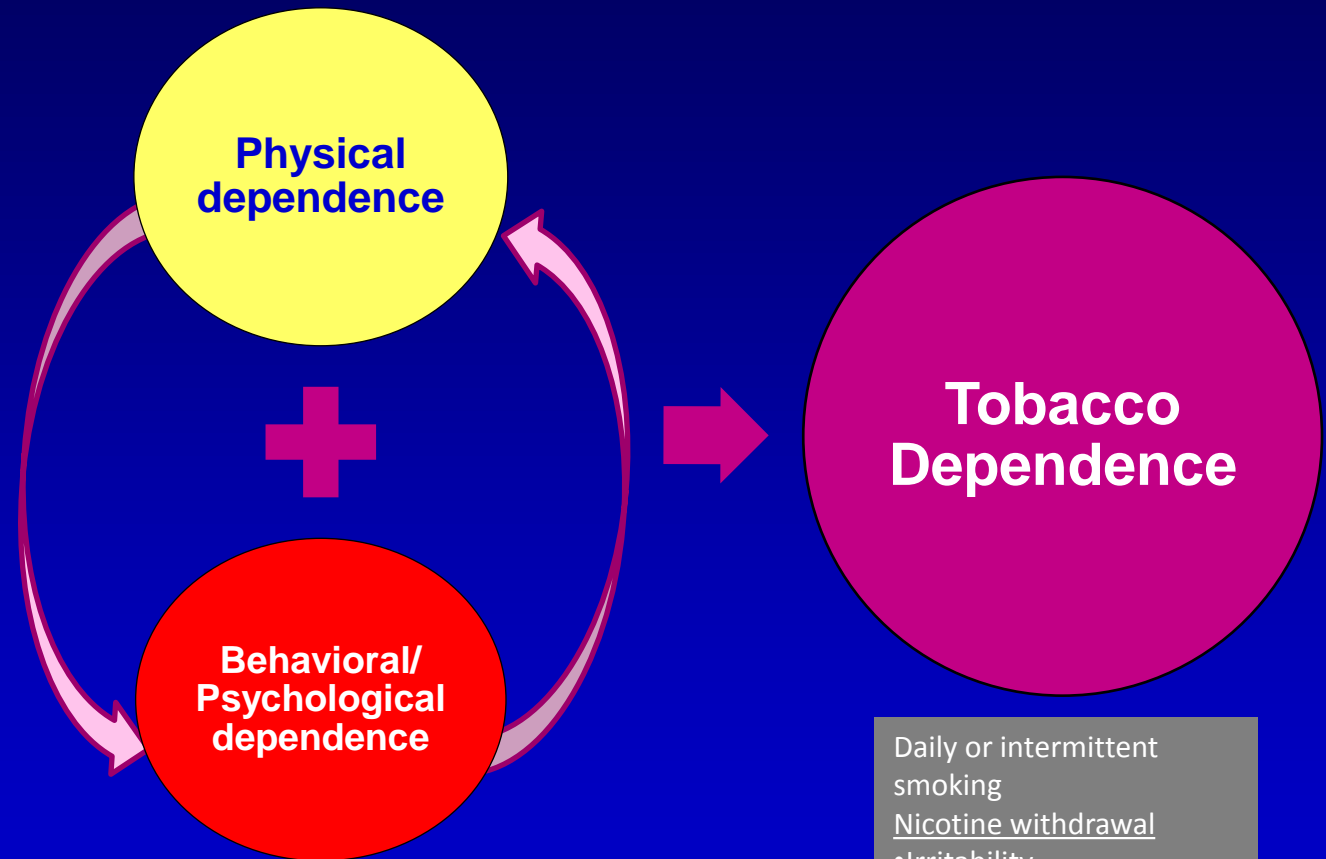
Tobacco dependence

Nicotine dependence

- Tolerance
- Time spent acquiring/using
- Long-term impairment
- Decreased number of DA receptors
- Decreased DA cell sensitivity
- Decreased of reward circuits to stimulation by natural reinforcers
- Compensation for reward deficits through smoking stimulation

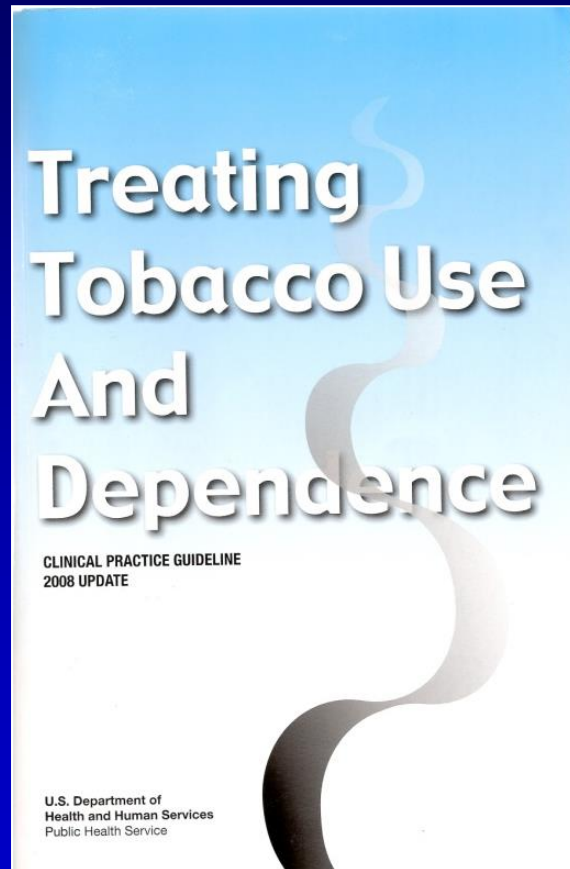
Behavioral learning

- Conditioning: Environmental cues become associated with smoking; triggers uncontrollable cravings when later exposed to these cues, even in absence of cigarettes
- Learned "reflex" is extremely robust, can emerge even after years of abstinence
- Negative reinforcement via relief of unpleasant withdrawal symptoms
- Cognitions (beliefs, attitudes) about the function of smoking in their lives, e.g., "manage stress" "relax me" "cope"

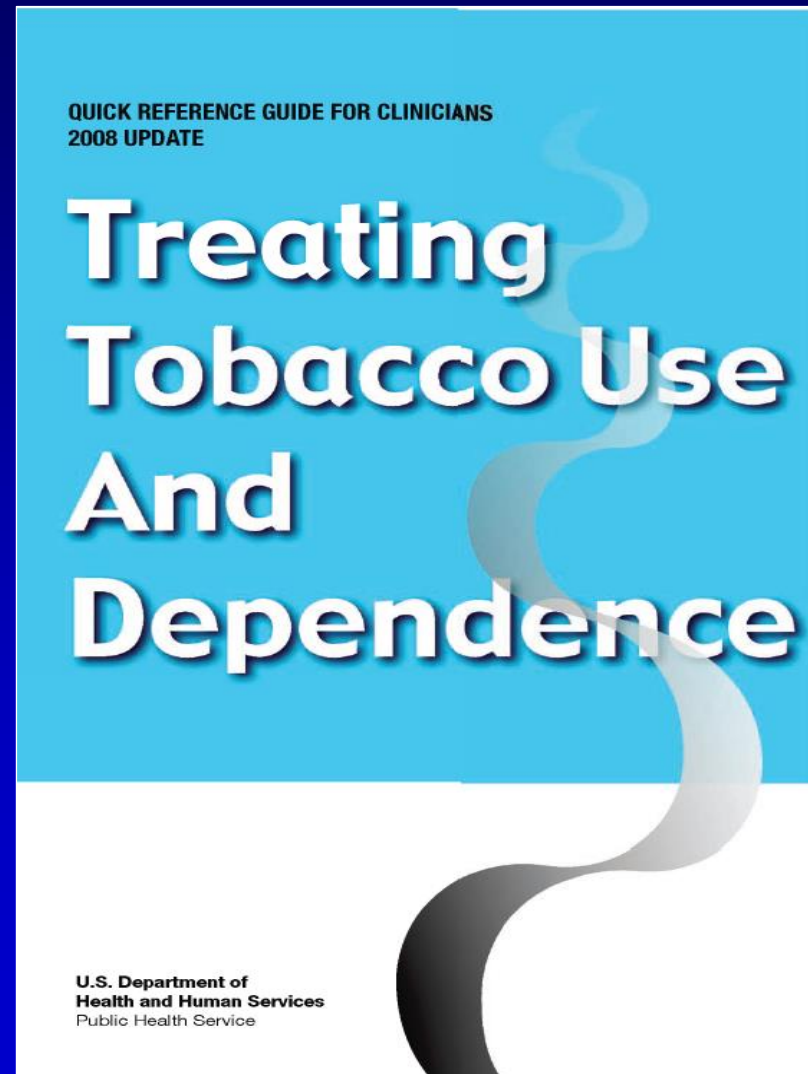


- Daily or intermittent smoking
- Nicotine withdrawal
- Irritability
 - Depression/anxiety
 - Restlessness
 - Impaired concentration
 - Increased appetite
 - (Constipation)

U.S.P.H.S. Clinical Practice Guideline: 2008 Treating Tobacco Use and Dependence



- 2008 - Updated Guideline
- Literature from 1975 - 2007
- Approx. 8,700 total articles



5 A's brief intervention for health care providers

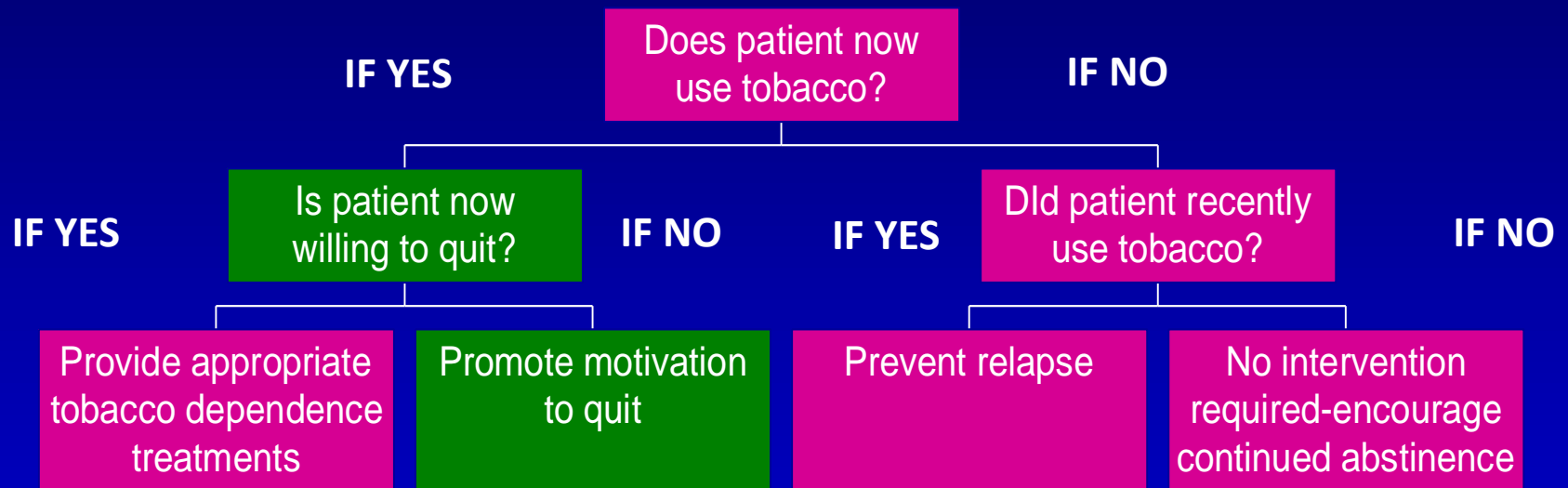
A sk about tobacco use	Identify and document tobacco use status for every patient at every visit.
A dvice to quit	In a clear, strong and personalized manner urge every tobacco user to quit.
A ssess willingness to make a quit attempt	Is the tobacco user willing to make a quit attempt at this time?
A ssist in quit attempt	For the patient willing to make a quit attempt, use counseling and medicine to help him or her quit.
A rrange follow-up	Schedule follow-up contact, preferably within the first week after the quit date.

ASK: Tobacco Use Screener

In the past 30 days, have you smoked cigarettes or used any other forms of tobacco (cigars, pipe, smokeless tobacco)?

- Every day
- Some days
- Not at all

Algorithm for Tobacco Use Intervention

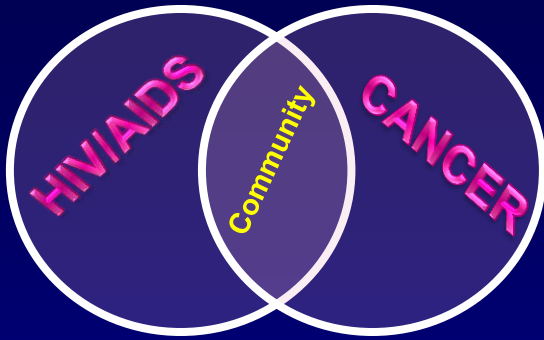


Tobacco Cessation Interventions in HIV/AIDS



Tobacco Cessation Trials in HIV/AIDS

Trial	Method
<p>1. Ingersoll et al., <i>AIDS and Behavior</i> 2009 <u>Eligible participants:</u> HIV+ adults, daily smokers, not pregnant, medically cleared <ul style="list-style-type: none"> N=40 HIV+ smokers VA university hospital ID clinic </p>	<p><u>Interventions (2 arms):</u> 1. Self-guided reading + NRT patch 2. One session with motivational interviewing + NRT patch</p>
<p>2. Lloyd-Richardson et al., <i>Addiction</i>, 2009 <u>Eligible participants:</u> HIV+ adults, current smokers (5 cpd past mo.) <ul style="list-style-type: none"> N=444 HIV+ smokers from six O/P HIV clinics & two PC offices in SE New England </p>	<p><u>Interventions (2 arms):</u> 1. Standard care (2 sessions with HE)+ NRT 2. Motivationally Enhanced (4 sessions)+ NRT</p>
<p>3. Vidrine et al., <i>Nicotine & Tobacco Research</i>, 2012 <u>Eligible participants:</u> HIV+ adult current smokers (≥5 cpd), CO ≥7 ppm <ul style="list-style-type: none"> N=474 HIV+ smokers from health center, Houston, TX </p>	<p><u>Interventions (2 arms):</u> 1. Usual care (advice, print materials, instructions on how to get NRT patches) 2. Cell phone (11 calls tailored/timed to quitting)</p>
<p>4. Humfleet et al., <i>Nicotine & Tobacco Research</i>, 2012 <u>Eligible participants:</u> Smoke most days of the month, be registered patients at the facilities. <ul style="list-style-type: none"> N=209 HIV+ smokers from CBOs, SFGH clinic </p>	<p><u>Interventions (3 arms):</u> 1. Individual care (IC; six 40-60 min. sessions)+ NRT 2. Web-based (6 steps modeled on IC model)+ NRT 3. Self-help (brief visit/print) + NRT</p>
<p>5. Moadel et al., <i>JAIDS</i>, 2012 <u>Eligible participants:</u> HIV+ adults, smoking w/in past 5 days, motivated to quit <ul style="list-style-type: none"> N=145 HIV+ smokers from ID Clinic, Bronx </p>	<p><u>Interventions (2 arms):</u> 1. Standard care (brief advice, print materials, offer of NRT) 2. Positively Smoke Free (PSF) 8-session group co-led by peer and professional, 90 min. each</p>



HIV/AIDS and Cancer: At the Community Level

At the Intersection of HIV/AIDS and Cancer: A Qualitative Needs Assessment of Community-Based HIV/AIDS Service Organizations

Jack E. Burkhalter, PhD¹, Sean Cahill, PhD^{2,3}, Elyse Shuk, MA¹, John Guidry, PhD⁴, Geoffrey Corner, BS¹, Alexandra Berk, MA¹, Norman Candelario, MSW⁴, Mark Kornegay⁴, and Erica I. Lubetkin, MD, MPH⁵

Abstract

Due to advances in treatment, persons living with human immunodeficiency virus (HIV) or acquired immunodeficiency syndrome (AIDS) are living longer, but with aging, immune deficits, and lifestyle factors, they are at increased risk for cancer. This challenges community-based AIDS service organizations (ASOs) to address the growing cancer needs

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A Aspirations
I Inspiration
R Respiration

Feasibility of Tobacco Use Intervention with Low-Income PLWHA in Community-Based AIDS Service Organizations

Burkhalter, Feinstein (MSKCC), Lubetkin (CCNY), Guidry (GMHC) and Community-Based AIDS Service Organizations

Primary Aim:

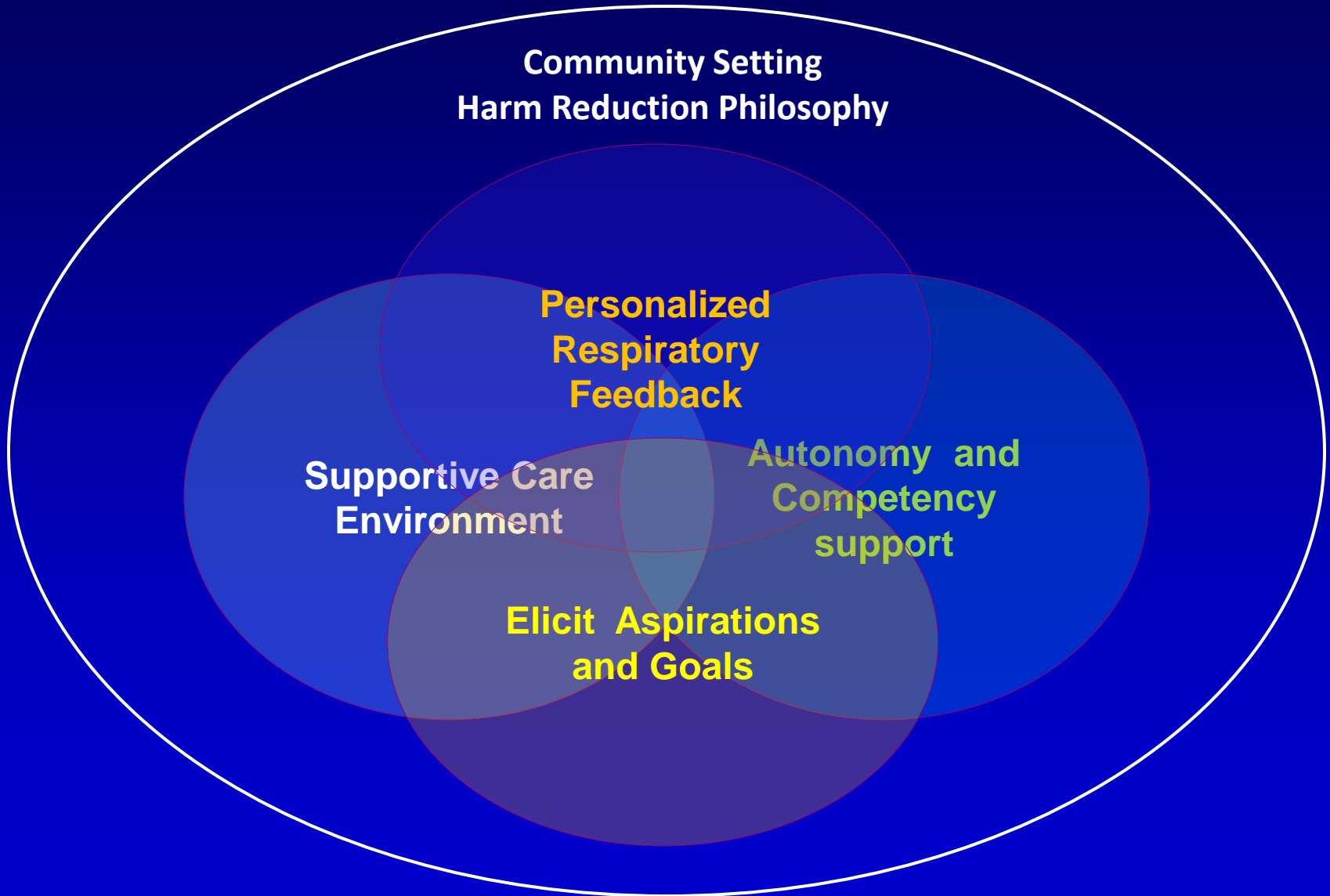
- Examine the feasibility of a motivational tobacco cessation intervention using respiratory biomarker feedback and facilitated uptake of public health cessation services in low-income PLWHA who smoke
 - Served in community-based HIV/AIDS organizations.
- Feasibility indicator
 - Participant acceptance of the intervention as measured by the percentage of eligible and consented participants completing the assigned interventions and the one-month assessments.

Secondary Aims:

- Estimate the differences between the experimental intervention (AIR) and the control condition (Treatment as Usual; TAU) on
 - Motivation to quit smoking
 - Uptake of New York State Smokers' Quitline referral and follow-through
 - Satisfaction with participation
- Explore moderators of participant motivation to quit smoking
 - Respiratory symptoms, depression, fatalism, substance use, and patient activation
- Assess potential factors influencing study participation by community organizations
 - Receptivity of HIV/AIDS service organizations to recruit and support the intervention;

What can motivate PLWHA to quit smoking?

A - I - R



Self-Determination Theory

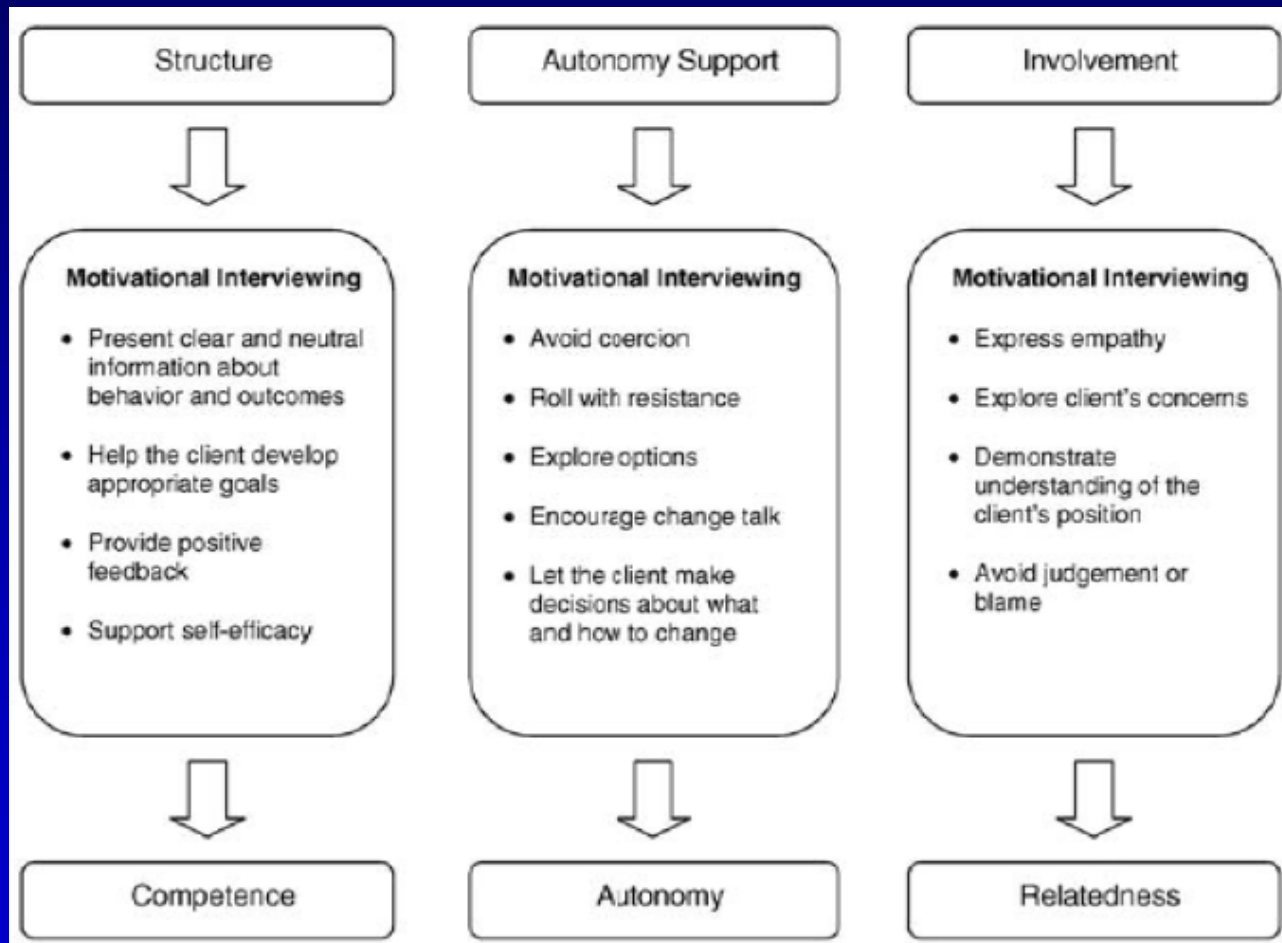
- 3 psychological needs:
 - **Autonomy**---degree to which individuals feel they are responsible for the initiation of their behavior
 - **Competence**---degree to which the individual feels they are able to achieve the desired goal or outcome
 - **Relatedness**--extent to which the person feels connected to others in a warm, positive, and authentic manner
- The extent to which these needs are **supported by the environment** leads to personal growth, adjustment, and to better physical health.
- To the extent that these needs are supported, the theory predicts that smokers will experience greater psychological energy to reach and maintain that goal.

Motivational Interviewing

A patient-centered yet directive method for enhancing intrinsic motivation to change by helping patients to explore and resolve their ambivalence about change.

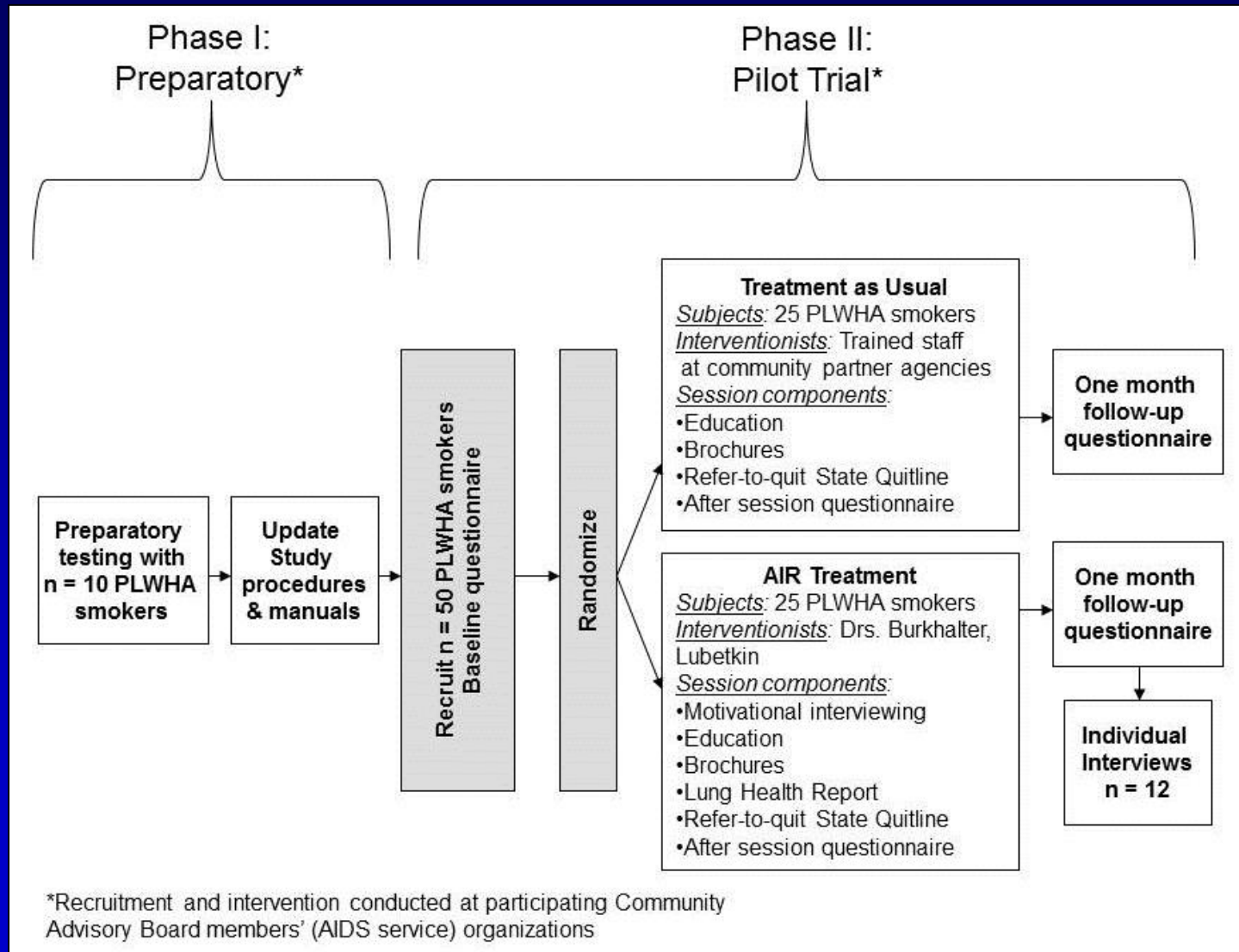
- 1) Express empathy
- 2) Avoid arguments
- 3) Develop discrepancy between problem behavior and broader goals
- 4) Support self-efficacy (belief that they can change)
- 5) Promote empowerment and personal choice

Self-Determination Theory and Motivational Interviewing

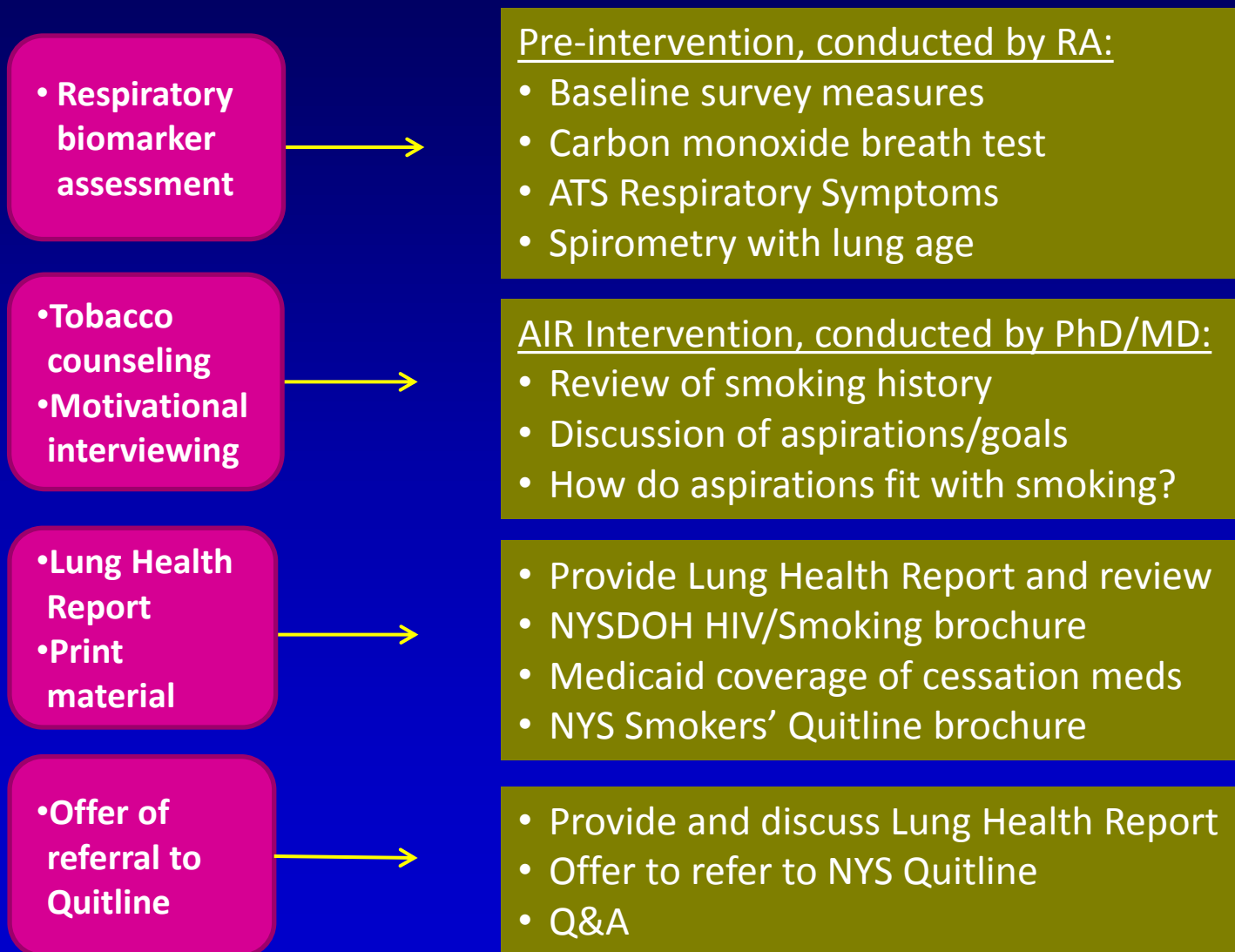


Source: Markland, D., et al., *Motivational interviewing and self-determination theory*. Journal of Social and Clinical Psychology, 2005. 24(6): p. 811-831.

A-I-R Trial: Schema



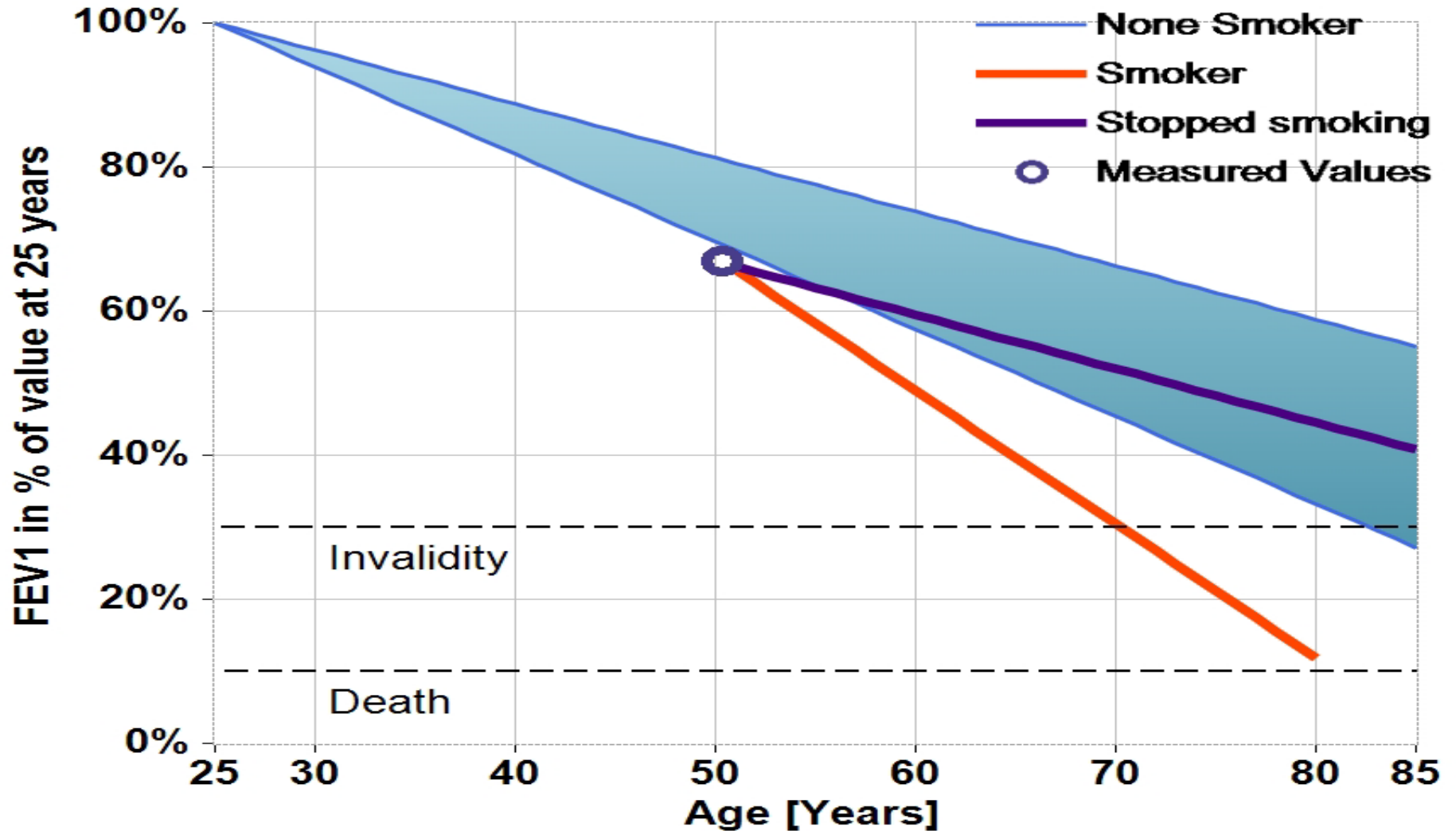
A-I-R



Respirator Biomarker Feedback

Lung Age Example

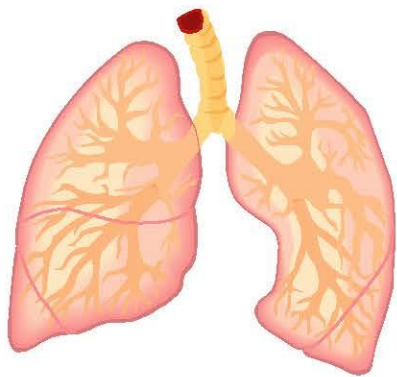
Birth age 50; Lung age 80



Aspirations Index

1	2	3	4	5	6	7
Not at all			Somewhat			Very much

EXAMPLE GOAL: To learn how to draw portraits of people.	Rating
How important is this to you?	6
How likely is it that this will happen in your future?	4
How much have you already achieved this goal?	2
GOAL 1: To...	Rating
How important is this to you?	
How likely is it that this will happen in your future?	
How much have you already achieved this goal?	
GOAL 2: To...	Rating
How important is this to you?	
How likely is it that this will happen in your future?	
How much have you already achieved this goal?	
GOAL 3: To...	Rating
GOAL 4: To...	Rating



Your Lung Health Report

Date:

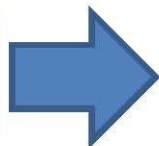
This personal lung health report uses information that you provided today. The report includes results from your breath tests and the lung symptoms that you reported. We hope that this report will help you as you think about your smoking, effects on your health, and how smoking affects the goals that you have for yourself.

Test results:

What this means for you:

If you quit smoking:

CO Level: _____ ppm

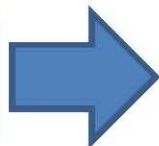


Carbon monoxide (CO) is a poison created by burning tobacco. With every puff, you breathe in CO. CO levels of 10 ppm or more can lead to fatigue, shortness of breath, and over time, increase your risk for heart disease.



Your **CO level** will drop to normal. You can feel more energy, better breathing, and have lower risk for heart disease.

Lung Age: _____ years



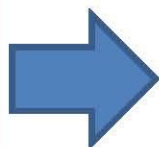
Lung age is the “functional” age of your lungs. If you are 40 years old and your lung age is 50 years, your lungs are breathing like those of someone who is 10 years older than you.



Your **lung age** will become more like your real age. Your lungs will begin to recover.

Breathing Symptoms:

- Cough
- Phlegm
- Wheezing
- Shortness of breath



If you have any of these **breathing symptoms**, smoking may be the cause, or smoking may worsen symptoms. You may develop lung cancer or emphysema if you continue to smoke.



Breathing symptoms may go away or lessen. Your risk for lung disease goes down.

Phase I: Pre-pilot AIR Outcomes, n = 9

Measure (score range)	Pre-	Post-
Intention to quit smoking (4-28) I will make an effort to quit smoking within the next month.	14.3 (8.3)	23.2 (5.0)**
Quitting self-efficacy (4-28) I feel confident in my ability to quit smoking.	17.0 (7.3)	22.0 (4.9)*
Support for autonomy (7-42) I feel that my smoking study counselor has given me choices and options about smoking (including not quitting).	--	41.3 (1.7)
Took up Quitline referral	--	8 (89%)
Quality of counseling		
Excellent	--	8 (89%)
Average		1 (11%)
Overall tx satisfaction:		
Highly satisfied	--	8 (89%)
Moderately satisfied		1 (11%)
*p<.05; **p<.01		

Back at the intersection

Noisy, messy, complicated, frustrating, confusing, sometimes dangerous and tricky, with few signposts...



...but this is where much of life and discovery takes place, and with all of its challenges there can be much satisfaction and personal reward in the work!

Thank you!

