



LUNG CANCER SCREENING AND SMOKING CESSATION

National Cancer Policy Forum Workshop on
Reducing Tobacco-Related Cancer Incidence and
Mortality

June 11, 2012



Background

- ✧ Low dose helical computed (CT) detects many lung tumors at early stage (ELCAP, 2001)
- ✧ NLST observed 20% decrease in lung cancer specific mortality in the low dose CT group as compared to the chest x-ray group (NLST, 2011)
 - ▣ Age 55+
 - ▣ Current smokers
 - ▣ Former smokers who quit within the past 15 years
 - ▣ At least 30 pack-year history
- ✧ Clinical guidelines are currently being reviewed and approved by professional societies (e.g., NCCN, ACS, USPTF, Chest)

Potential benefits and harms of CT screening for lung cancer

- ✧ Opportunity for delivery of quitting advice and tobacco cessation treatment?
- ✧ Justification of continued smoking?

Why Does Lung Cancer Screening Provide an Invaluable Opportunity to Promote Smoking Cessation?



- ✧ Access to smokers with longstanding history of heavy tobacco use
- ✧ Personalize tobacco-related risks of persistent tobacco use
- ✧ Multiple potential encounters with health care providers

What Are the Challenges in Promoting Smoking Cessation in Lung Cancer Screening Settings?

- ✧ Variable quitting motivation of screening enrollees
- ✧ Variable readiness, resources and capacity of lung cancer screening sites/staff
- ✧ Inconsistent delivery of smoking cessation treatment in lung screening clinical programs
- ✧ Most smokers will get “good news”. Will normal results reduce quitting motivation and provide “license to smoke”?

Key Questions



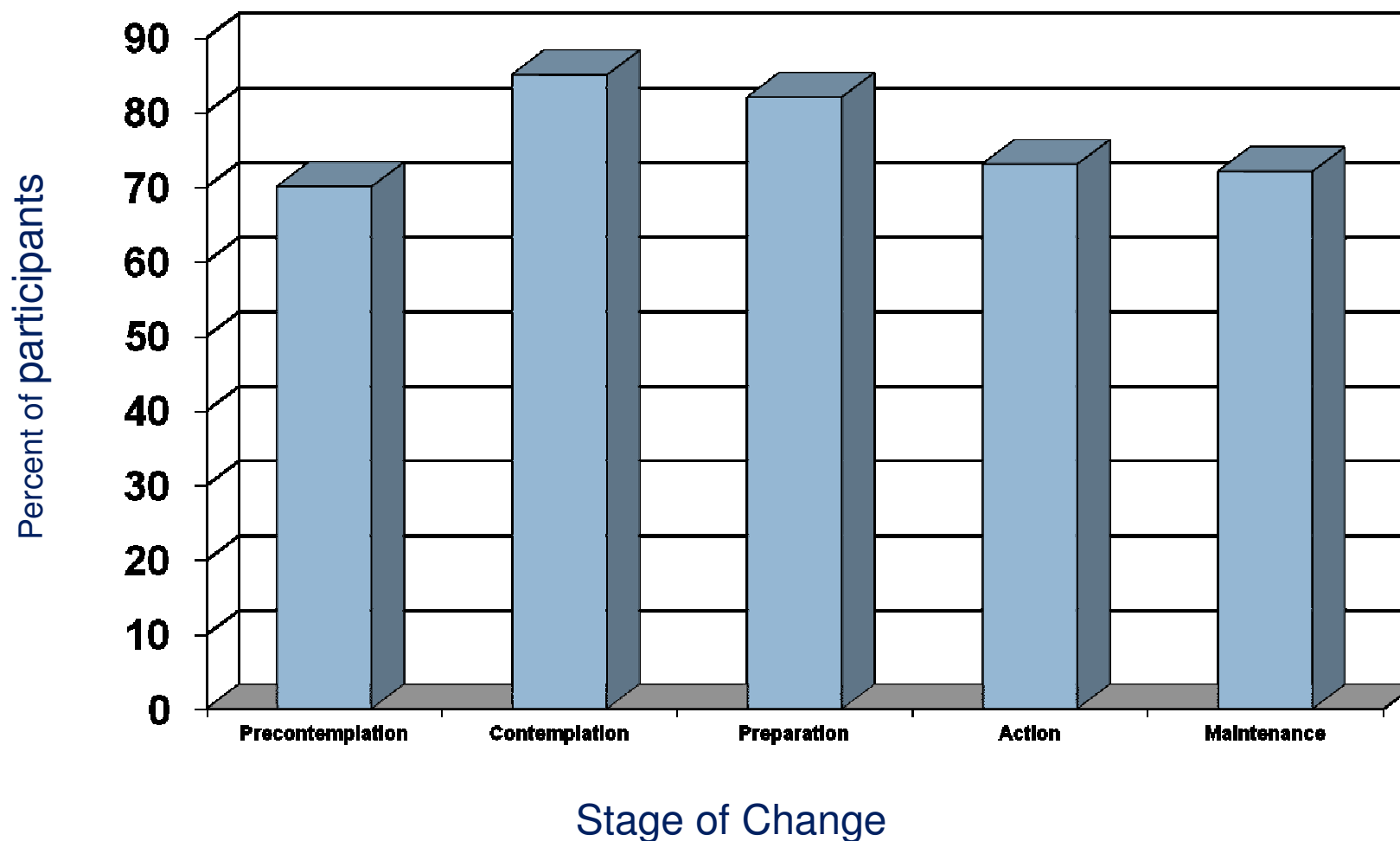
- ✧ How motivated to quit are screening participants?
- ✧ What is the impact of undergoing screening on smoking cessation?
 - ▣ Do screening results influence post-screening cessation?
- ✧ What are some clinical models for promoting smoking cessation in lung cancer screening protocols?

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Smokers' Interest in Being Screened for Lung Cancer, By Motivation to Quit (n=585)



Source: Hahn et al. 2006

Motivation to Quit Smoking: NLST/ACRIN Trial



- ✧ Current smokers (n=312):
 - ▣ 70% Considering quitting
 - ▣ 17% Preparing to quit
 - ▣ 13% No quitting intentions

- ✧ Former smokers (n=260):
 - ▣ 23% Concerned about smoking relapse

Readiness to Quit Smoking (NY-ELCAP) n=2079)

✧ Stages of readiness

Seriously thinking of quitting within the next 30 days -
Preparation (31.6%)

Seriously thinking of quitting within the next 6 months -
Contemplation (46.7%)

Not seriously thinking of quitting – *Pre-contemplation* (21.7%)

✧ Effort to quit since CT appointment was made (37.4%)

✧ Belief that quitting reduces lung cancer risk

- ▣ Not at all (6%)
- ▣ Somewhat (18%)
- ▣ Moderately (25%)
- ▣ Very much (51%)

Ostroff et al, 2011 SBM

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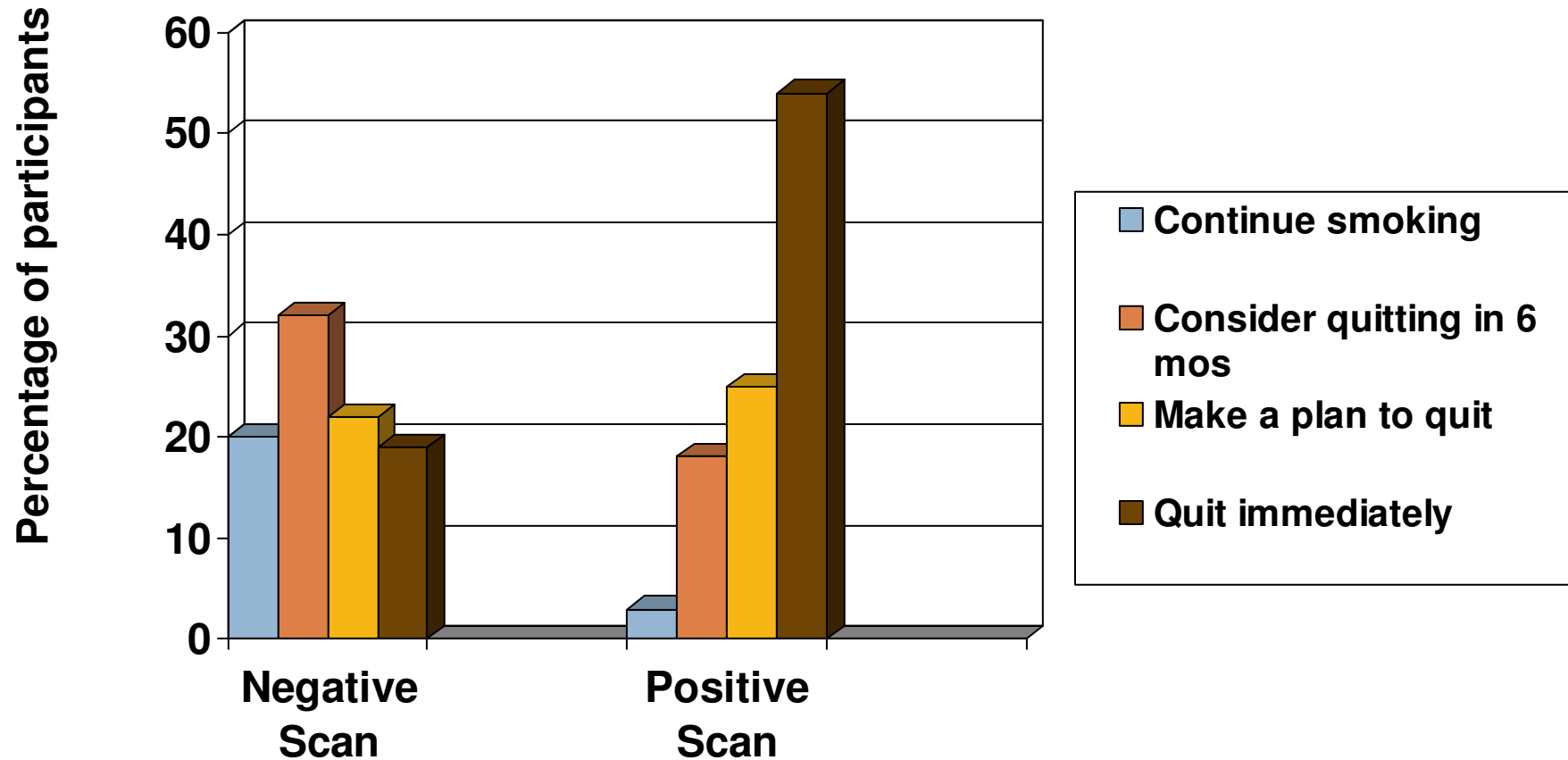
Validity of Self-Reported Smoking Abstinence

- ✧ Compared self-reported smoking status vs urinary cotinine levels
- ✧ Smokers (n=55) enrolled in lung ca screening RCT
 - ▣ 59 years old, 96% Caucasian, 55% male
 - ▣ Self-reported smoking status and urinary cotinine levels were highly consistent
 - n 7% misclassification rate
 - n 100% sensitivity (excluding NRT users)
 - n 95% specificity (excluding NRT users)

Smoking Cessation Among Lung Cancer Screening Enrollees

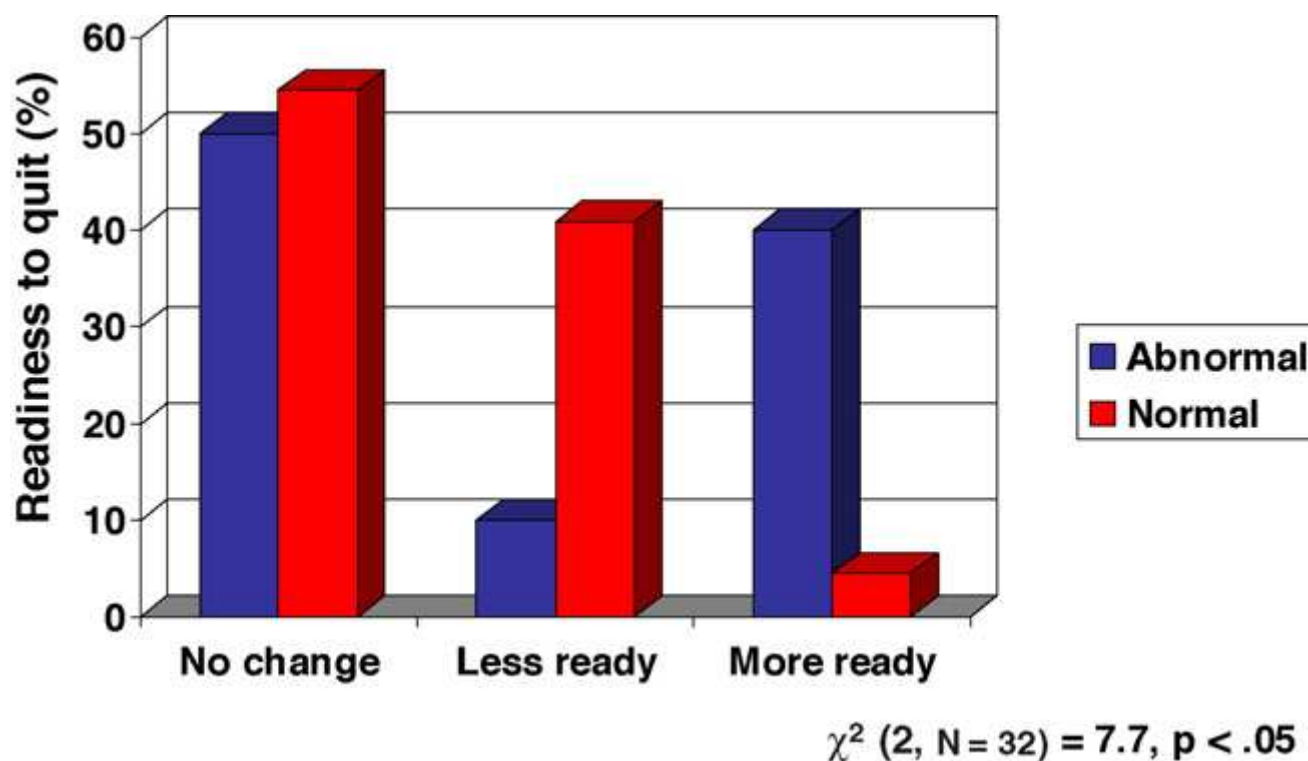
<i>Paper</i>	<i>Site</i>	<i>Design</i>	<i>Sample</i>	<i>Quit Rate</i>
Ostroff, 2001	Cornell-ELCAP	Cross-sectional	134 baseline current smokers (CS)	23%
Cox 2003	Mayo	Longitudinal	901 CS	14%
Clark, 2004	Mayo	Cessation RCT	171 CS	5-10%
Townsend, 2005	Mayo	Longitudinal 3 yr follow-up	926 CS	20-40%
MacRedmond, 2006	Dublin	Longitudinal 2 yr follow-up	307 CS	19%
Taylor et al, 2007	Georgetown LSS NLST	Longitudinal	162 CS	7%
Ashraf et al 2009	DLCST	Screening RCT (control)	1545 CS in CT arm	12%
Anderson et al 2009	ELCAP	Longitudinal 6 yr follow-up	730 baseline smokers 1227 former smokers	29% 4%
Aalst et al, 2010	NELSON	Longitudinal 2 yr follow-up	1084 male CS	17%
Ostroff et al, 2011	NY-ELCAP	Longitudinal 1 yr follow-up	1580 CS	16%

The Effect of “Hypothetical” Scan Result on Quitting Intentions



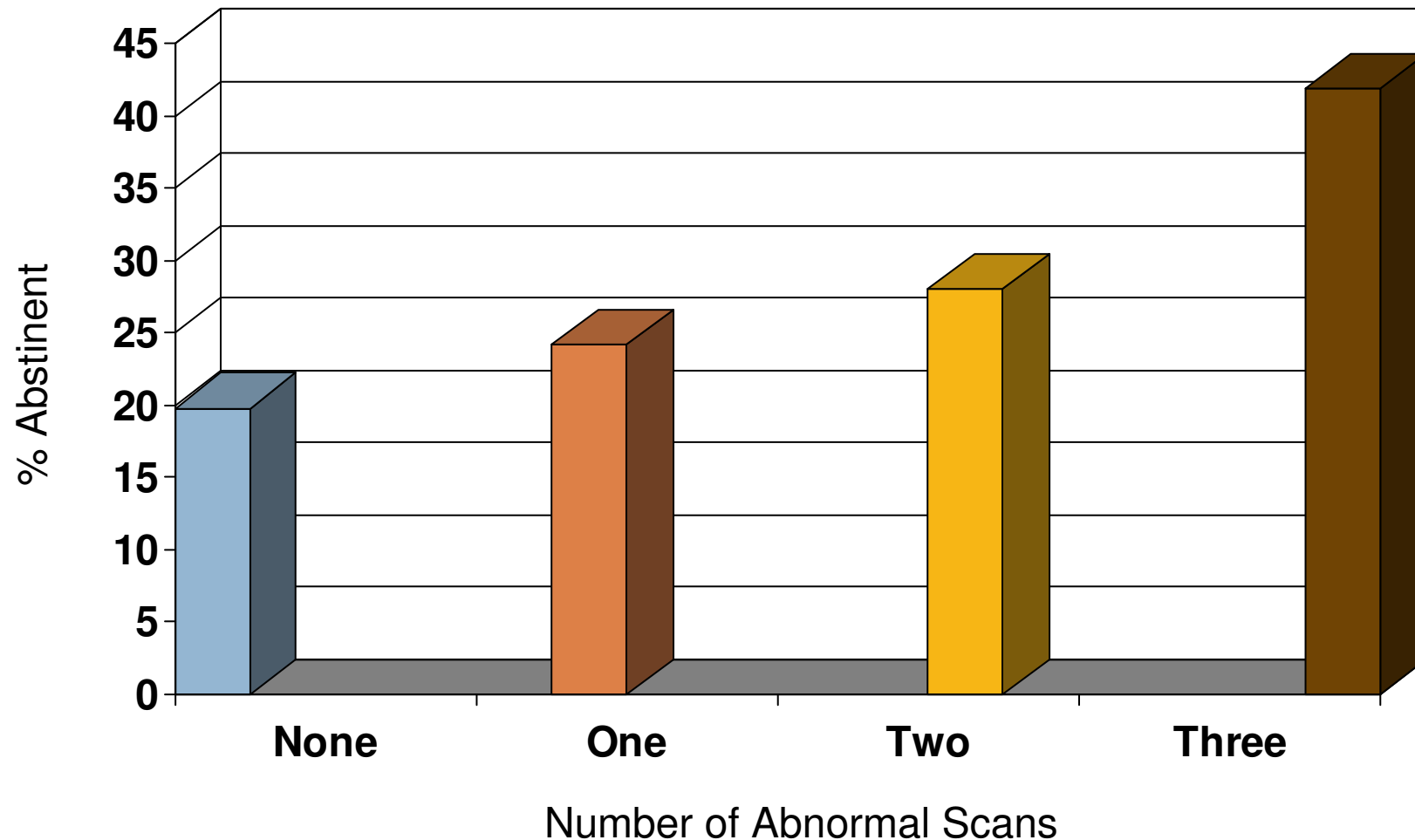
Source: Schnoll et al 2003

Change in Readiness to Quit from Baseline to Follow-up, Stratified By Screening Result, Age <64 years old



Source: Taylor et al 2007

Effect of CT Scan Results on 3 year Smoking Abstinence Rates (n=926 smokers)



Source: Townsend et al, 2005

Smoking Abstinence among Lung Cancer Screening Enrollees by Screening Results

<i>Citation</i>	<i>Abstinence Rates by CT Screening Results</i>	
	<i>Positive</i>	<i>Negative</i>
Ostroff et al, 2001	62%	45%
Aalst et al 2009	15%	9%
Townsend et al, 2005	42%	20%
Ashraf et al 2009	18%	11%
Styn et al 2008	18%	7%

Key Questions



- ✧ How motivated to quit are screening participants?
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Cessation Treatment Model

CT Screening Visit

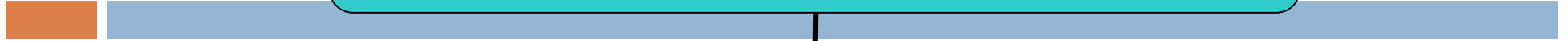
MD Advice (Radiologist)

Brief Cessation Counseling (RN/Health Educator)

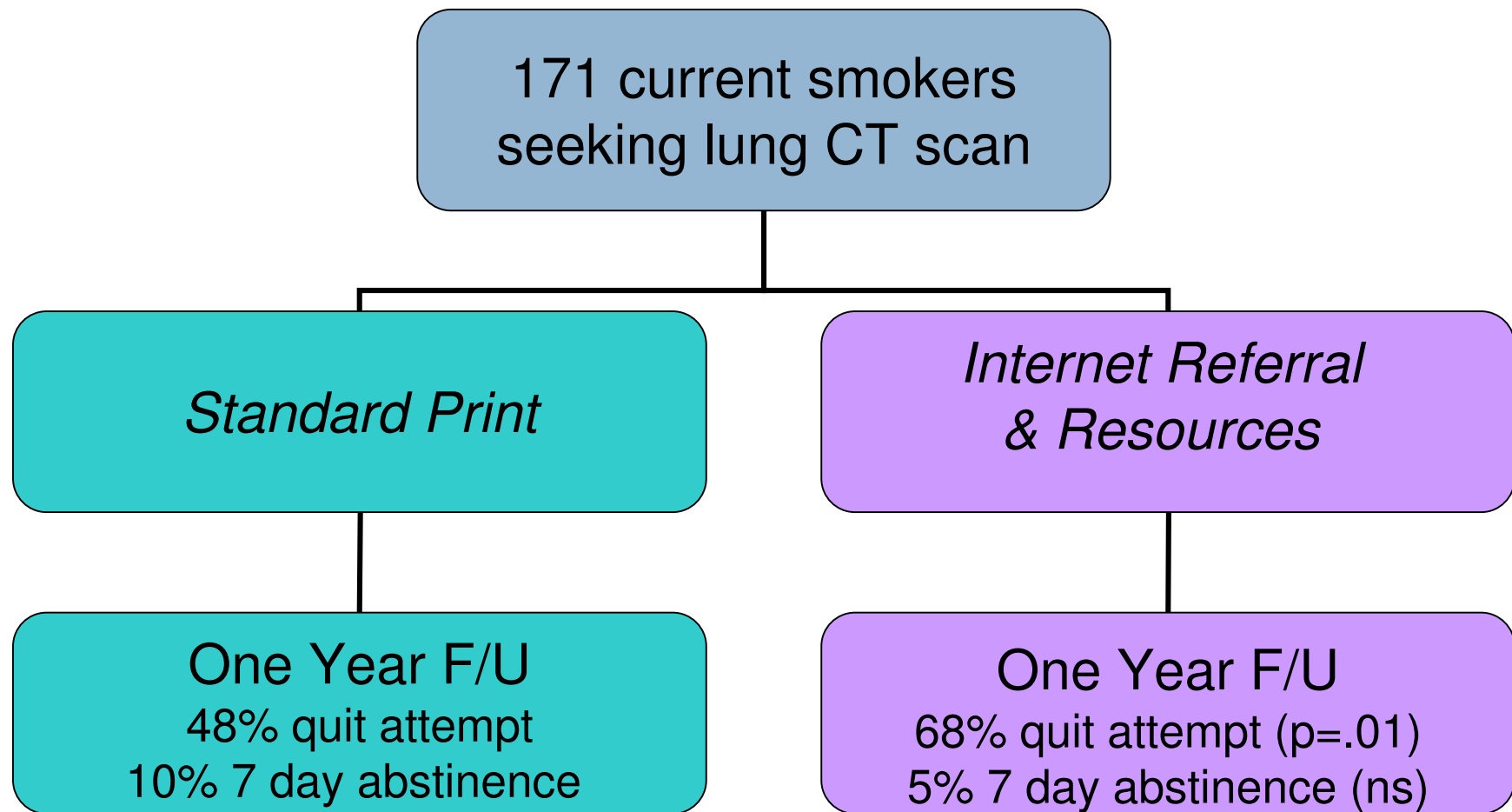
Notification of CT Scan Results

Booster counseling to smoker

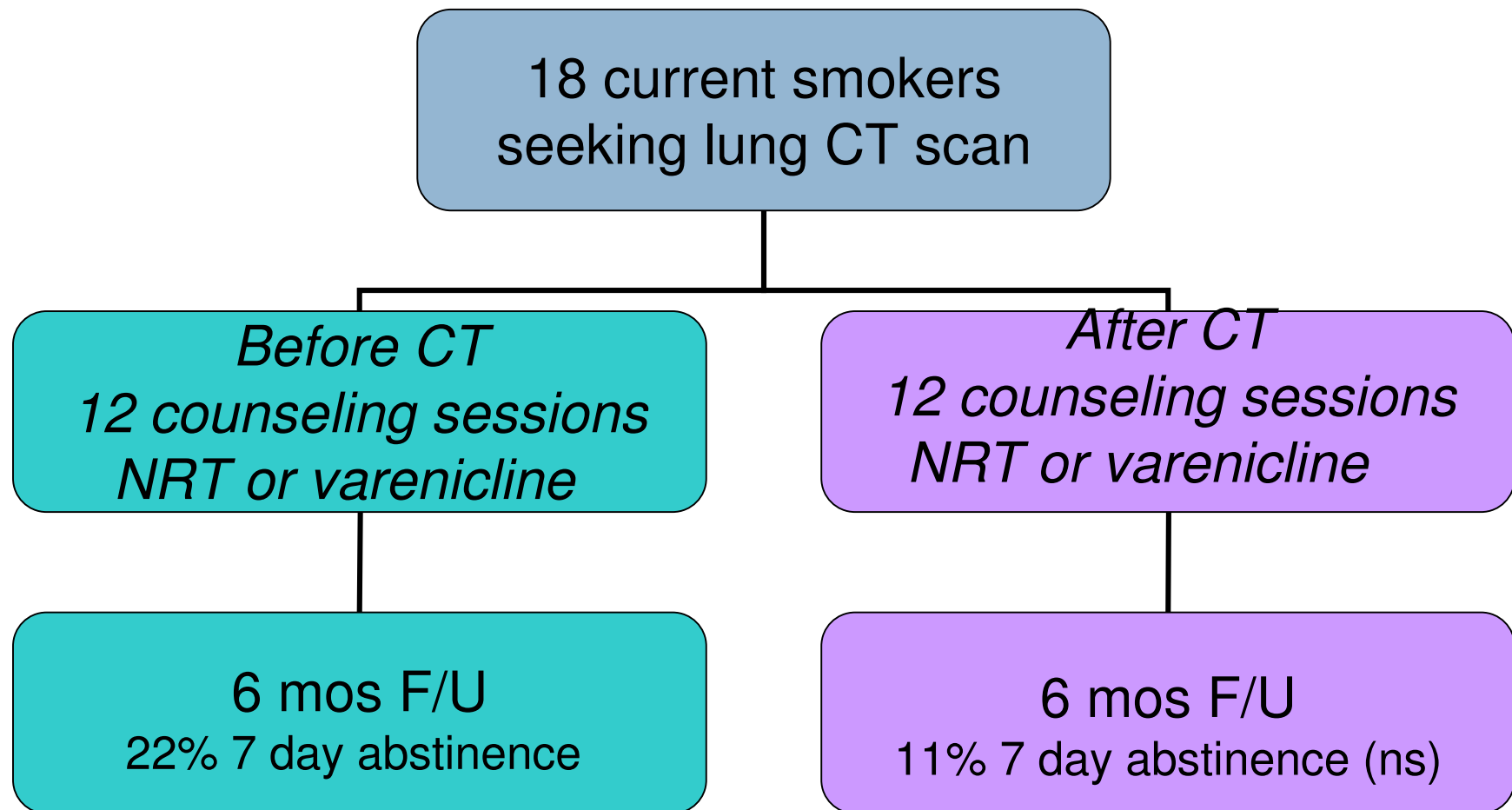
Booster prompt to referring MD



Effectiveness of Self Help Materials in a Lung Cancer Screening Population



Pilot study of Nurse-Delivered Smoking Cessation Intervention



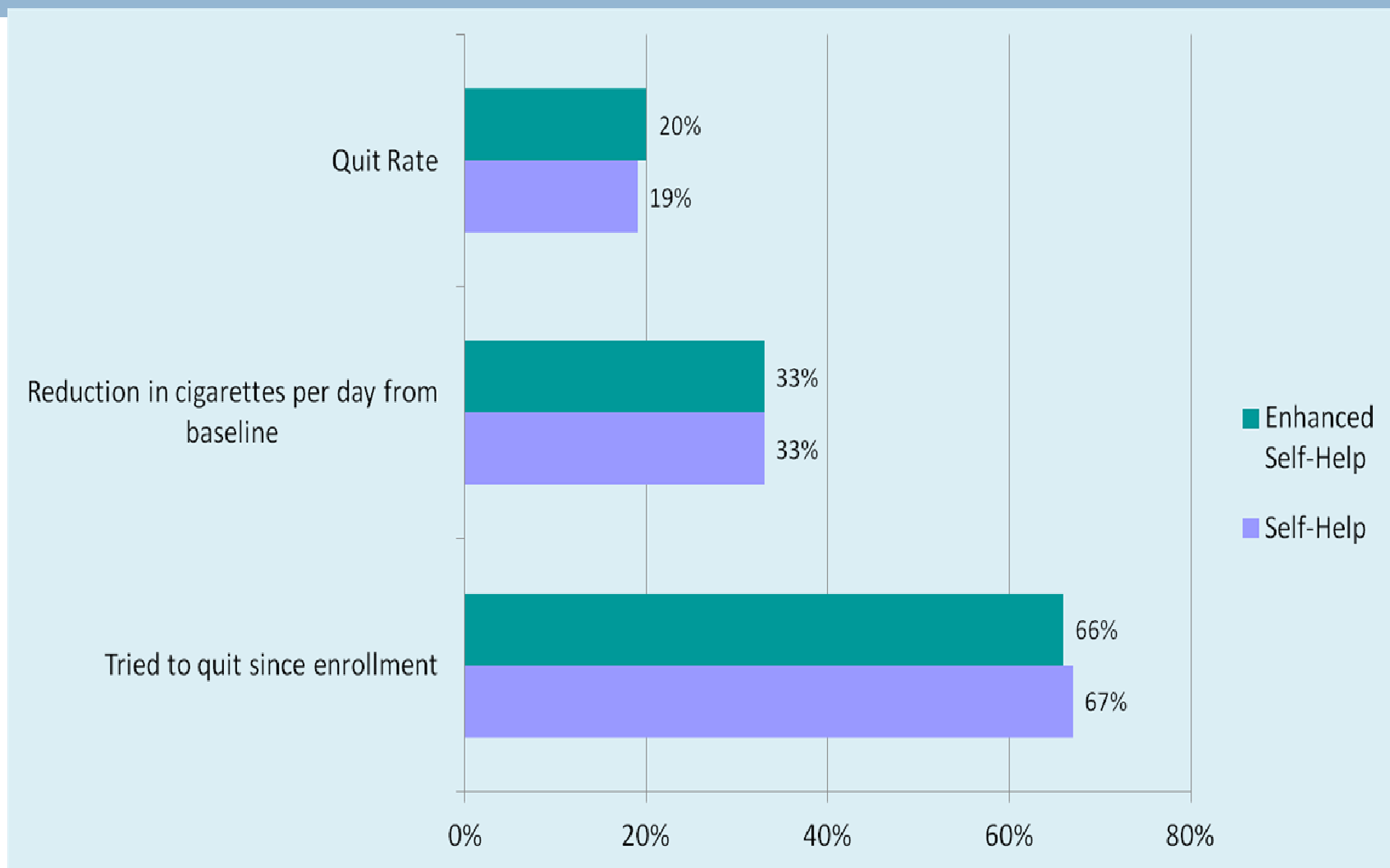
Legacy Project

Brief Cessation Intervention Conditions

Self Help Only (Group A) n=323	Enhanced Self-Help (Group B) n=312
<i>Become an Ex</i> , American Legacy Foundation	<i>Become an Ex</i> , American Legacy Foundation
Referral to National Quitline (1-800-QUIT-NOW)	Referral to National Quitline (1-800-QUIT-NOW)
	15 min motivational counseling provided at enrollment by trained study site coordinators
	Personalized risk communication and decision tool – Patient
	Personalized risk communication and decision tool – Referring MD
	Offered Tobacco Cessation Toolkit to Referring MD

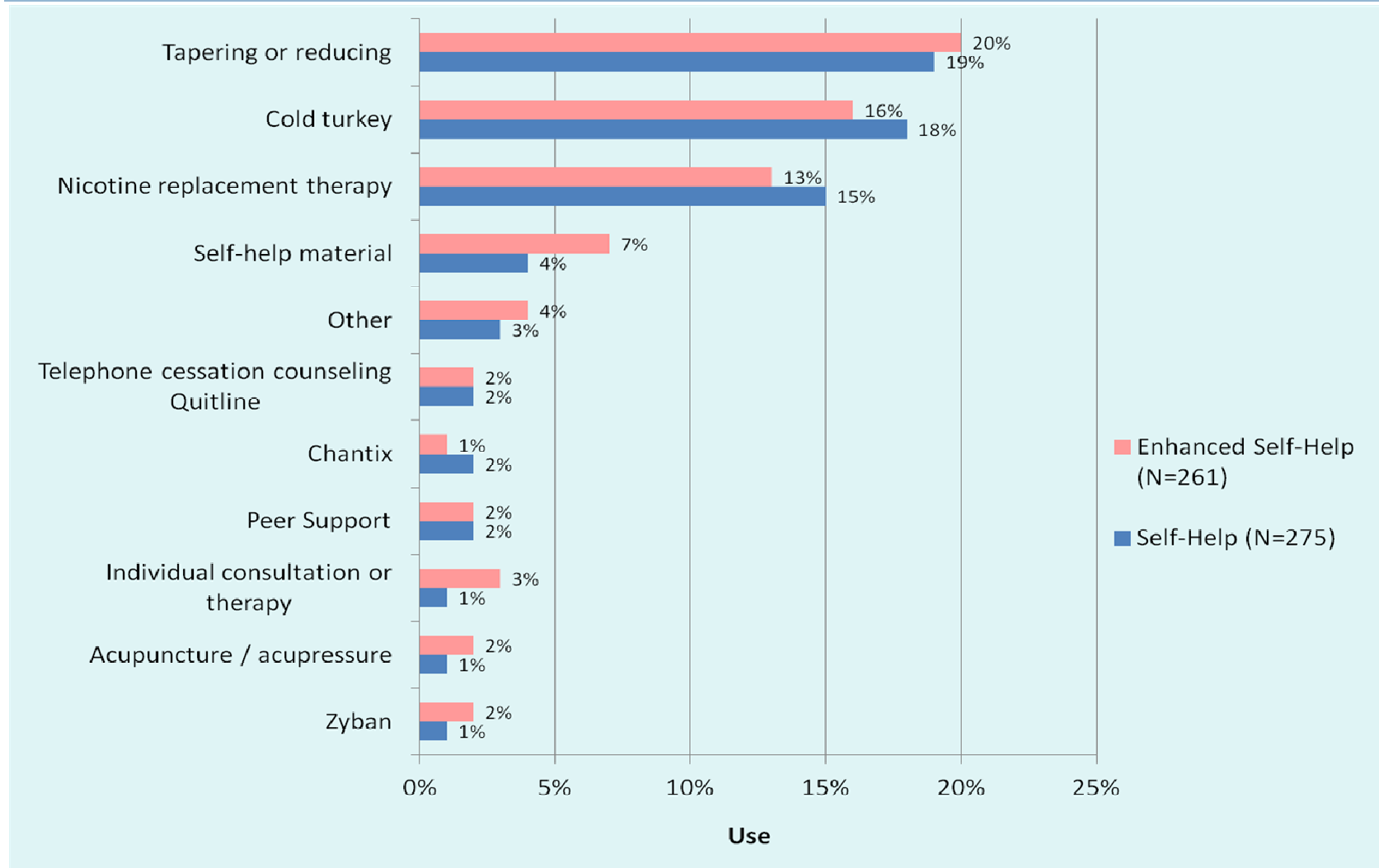
Ostroff et al,
2012 SRNT

Comparison of two minimal contact cessation interventions: 12 month follow-up results



Ostroff et al, 2012 SRNT

Self-reported Use of Smoking Cessation Strategies



Ostroff et al, 2012 SRNT

Summary

- ✧ Most smokers enrolling in CT lung screening programs are motivated to quit
- ✧ Higher quit rates than generally observed in naturalistic studies
- ✧ Inconclusive results on the impact of screening results on cessation outcomes
- ✧ Low utilization of evidence-based cessation approaches

Future Goals

- ✧ To integrate brief, evidence-based smoking cessation interventions in the context of lung cancer screening
 - ▣ Dose intensity (minimal, intensive)
 - ▣ Clinical milieu (onsite, link to quitlines, etc)
 - ▣ Optimal timing
 - ▣ Personalized risk communication
- ✧ To identify modifiable barriers and facilitators (e.g., perceived risk, cancer worry, perceived benefits of quitting) so as to guide the development and evaluation of effective cessation interventions for high risk smokers.

Tobacco Cessation and Screening

Relevant Questions

- ✧ Should delivery of smoking cessation treatment be included (mandated for coverage) in emerging clinical protocols?
- ✧ What is an appropriate approach for counseling patient with a negative screen?
- ✧ What tobacco-related data should be collected by lung cancer screening programs?