

Smoking Cessation in Screening Programs

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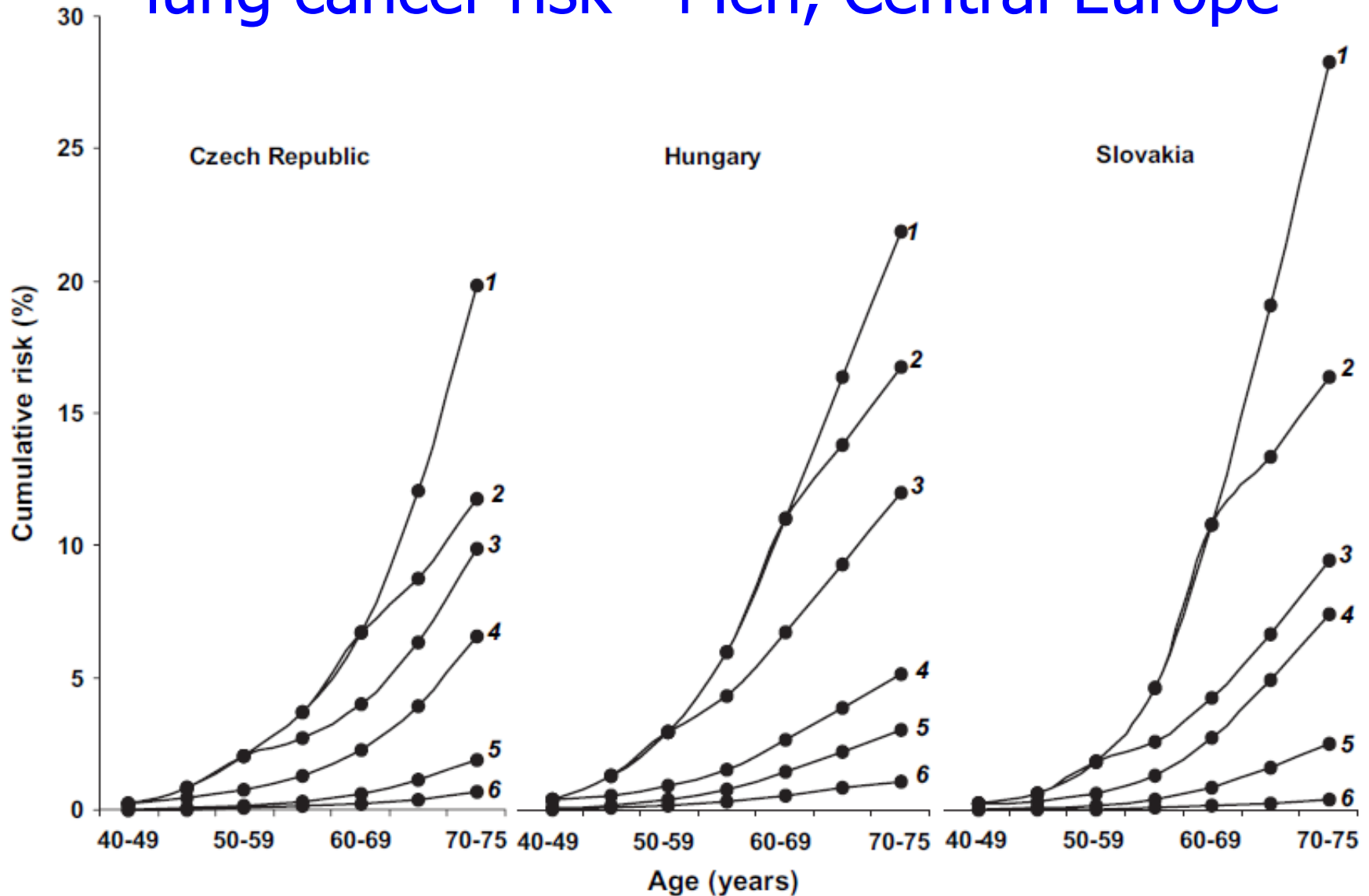
Evidence of effectiveness of tobacco control activities

- Convincing evidence
 - fiscal policies
 - smoking bans
- Limited evidence
 - health warnings
 - ban on advertising and promotion
 - medicines
 - medical advice to adult
- Inadequate evidence
 - health education in youth

Effect of quitting smoking on lung cancer mortality

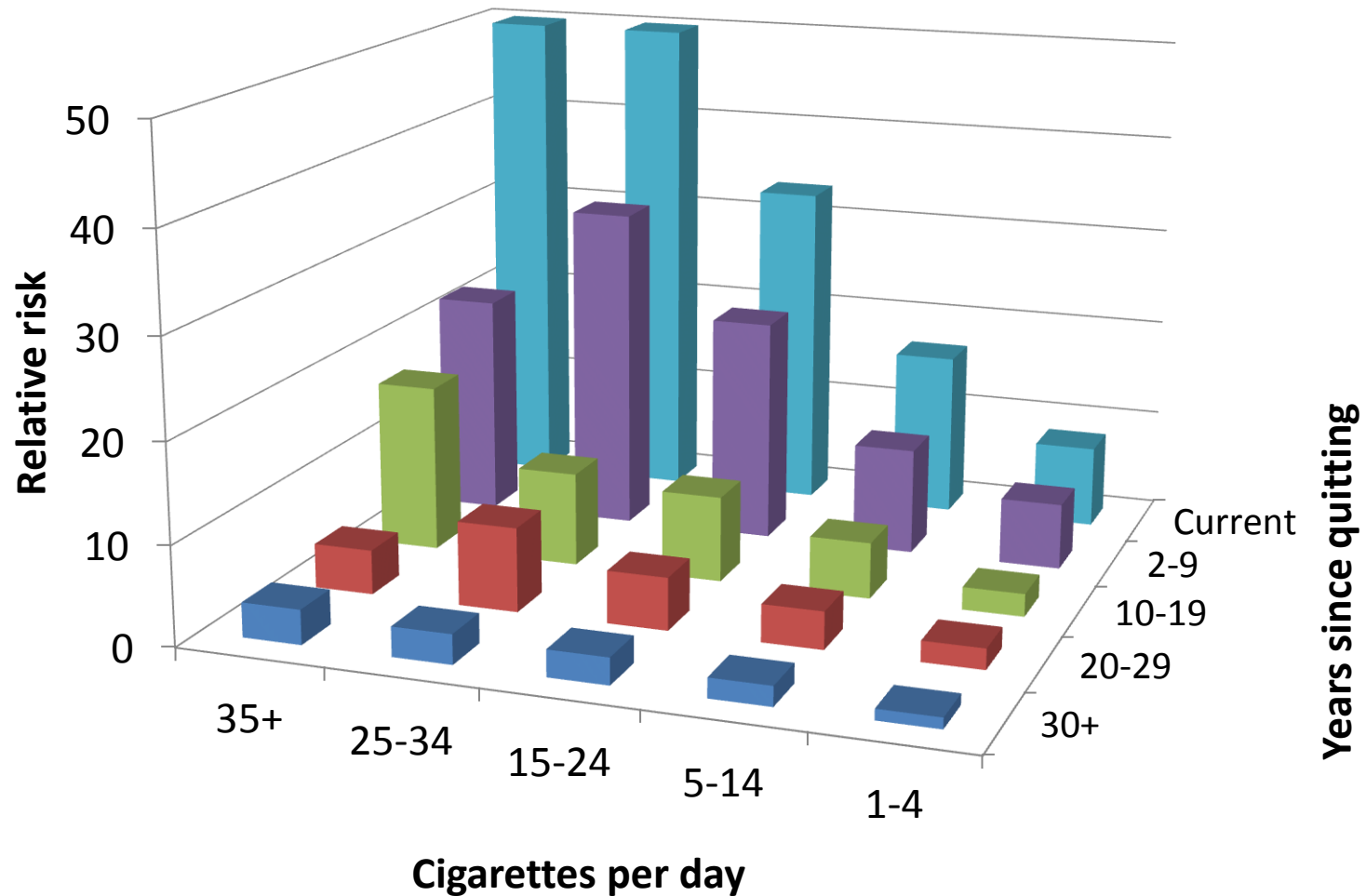
- Quitting smoking avoids most of lung cancer mortality
 - lifetime risk in long-term quitters is about 5-10 times less than the risk of continuous smokers
 - risk is twice that of never smokers
- Quitting at any age works
 - more than 1/2 of cumulative risk at age 75 is avoided by quitting before age 60
 - more than 2/3 by quitting before age 50

Effect of quitting smoking on cumulative lung cancer risk - Men, Central Europe

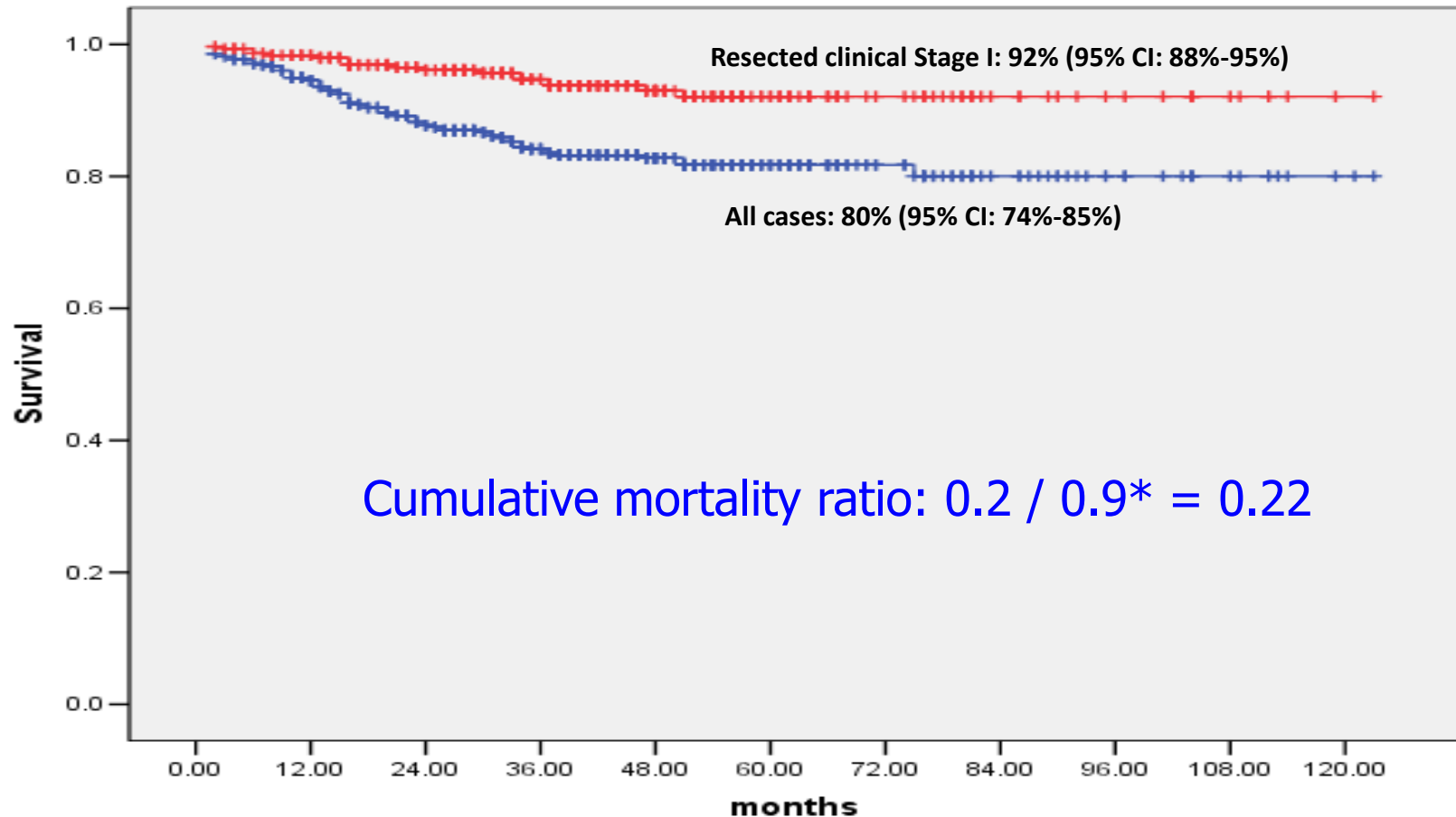


1: continuous smokers; 2 quit 60-69; 3: quit 50-59; 4: quit 40-49; 5: quit < 40; 6: never smokers

Quitting works at any dose



Survival in the ELCAP program



No. at risk

All cases	484	431	354	279	181	90	50	28	16	9	2
Resected Stage I	300	279	241	191	119	59	34	18	12	7	1

* historical series

Courtesy C. Henschke

Issues in interpreting survival benefit in non-randomized studies

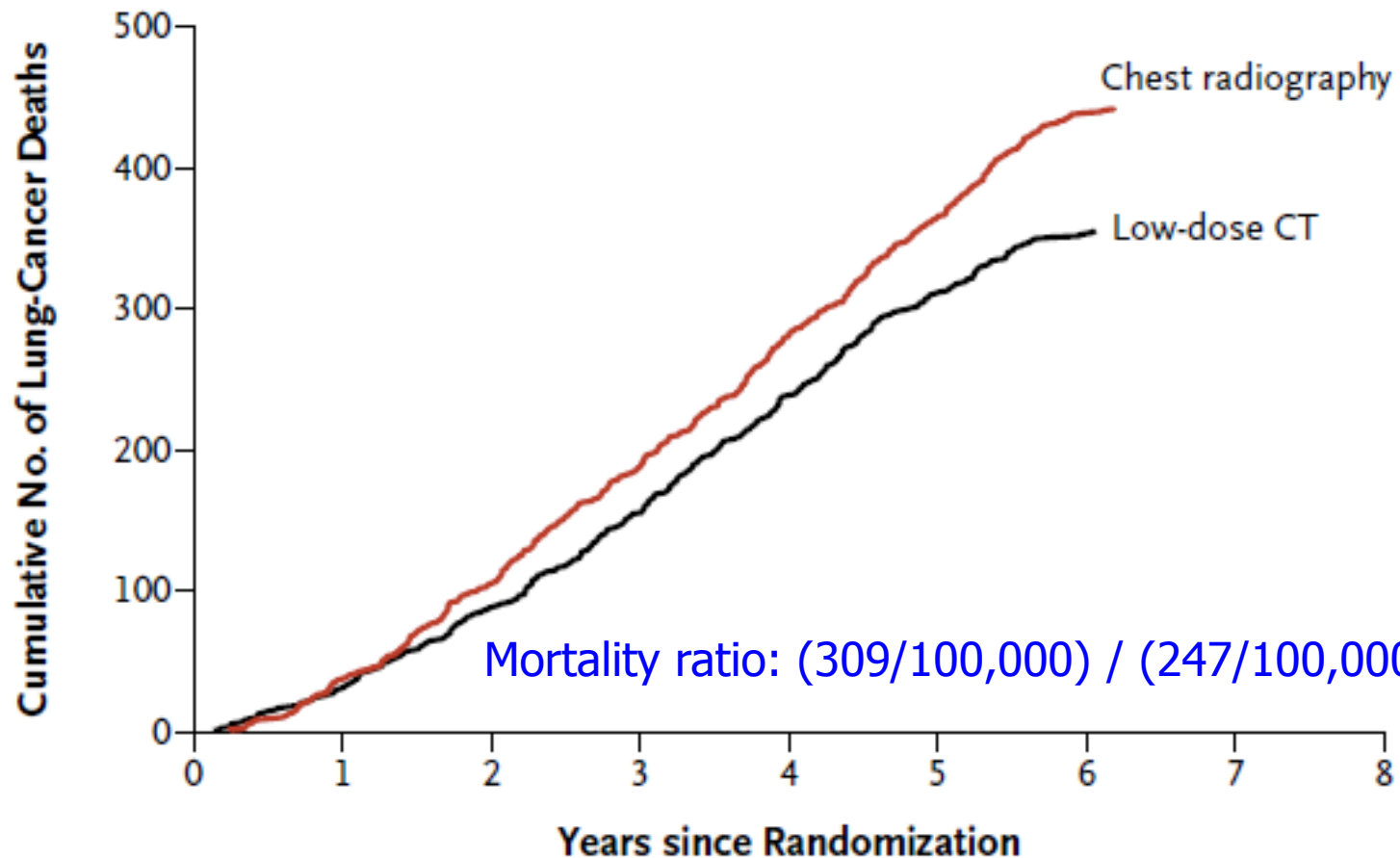
- Sources of bias
 - lack of valid comparison group
 - smoking cessation
 - overdiagnosis
 - confounding by baseline smoking and other risk factors
- Effect of bias
 - direction away from the null
 - magnitude unclear

Lung cancer mortality in ELCAP vs. two cohorts

Comparison cohort	Observed	Expected	SMR
CPS-II	64	99.8	0.64
CARET	28	77.6	0.36

Mortality reduction in NLST

B Death from Lung Cancer



Issues in interpreting survival benefit in NLST

- Limitations
 - lack of untreated control group
 - limited number of CT
 - short follow-up
- Effect of limitations
 - direction towards the null
 - magnitude unclear

Lung cancer mortality reduction

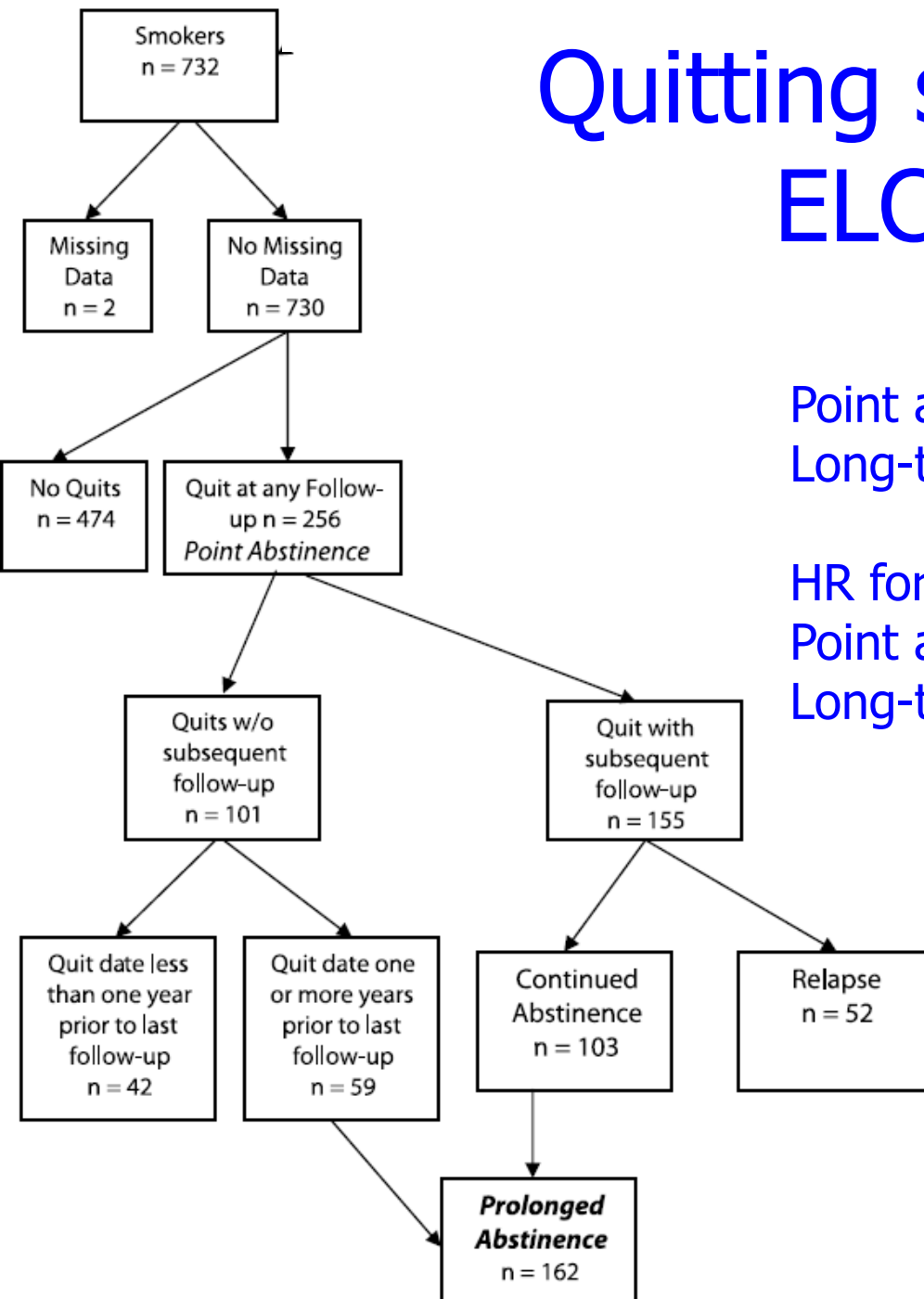
Smoking cessation vs. CT screening

	Smoking cessation	CT screening
Type of data	Observational	Experimental and observational
Strength of evidence	Convincing	Convincing
Amount of evidence	Large	Limited
Magnitude of effect (RR)	Up to 0.1	0.2 - 0.4
Timing of effect	5+ yrs	2+ yrs

Effect of CT screening on smoking cessation

- Evidence of higher cessation rates among participants in screening trials
 - most studies have a short follow-up
- Unclear effect of screening results
 - higher short-term cessation among participants with positive result

Quitting smoking in the ELCAP study



Point abstinence: $256/730 = 35.1\%$

Long-term abstinence: $162/688 = 23.5\%$

HR for positive vs. negative result

Point abstinence: 1.4 (1.0, 1.9)

Long-term abstinence: 1.3 (0.9, 2.0)

Quitting smoking in DLCST

- 2860 smokers in DLCST
 - 1462: screening arm
 - 1398: control arm
- 1-yr quitting: $339/3124 = 11.9\%$
 - screening: 11.9%; control: 11.8%
- OR for screening vs. control
 - 1-yr quitting: 1.0 (0.8, 1.2)
- OR for positive vs. negative results
 - 1-yr quitting: 1.7 (1.1, 2.7)

Quitting smoking in the NELSON trial - 1

- 1284 smokers in NELSON
 - 581: screening arm
 - 503: control arm
- 2-yr quitting: $175/1084 = 16.1\%$
 - screening 13.9%; control: 18.7%
- OR for screening vs. control
 - 2-yr quitting: 0.7 (0.5, 1.0)

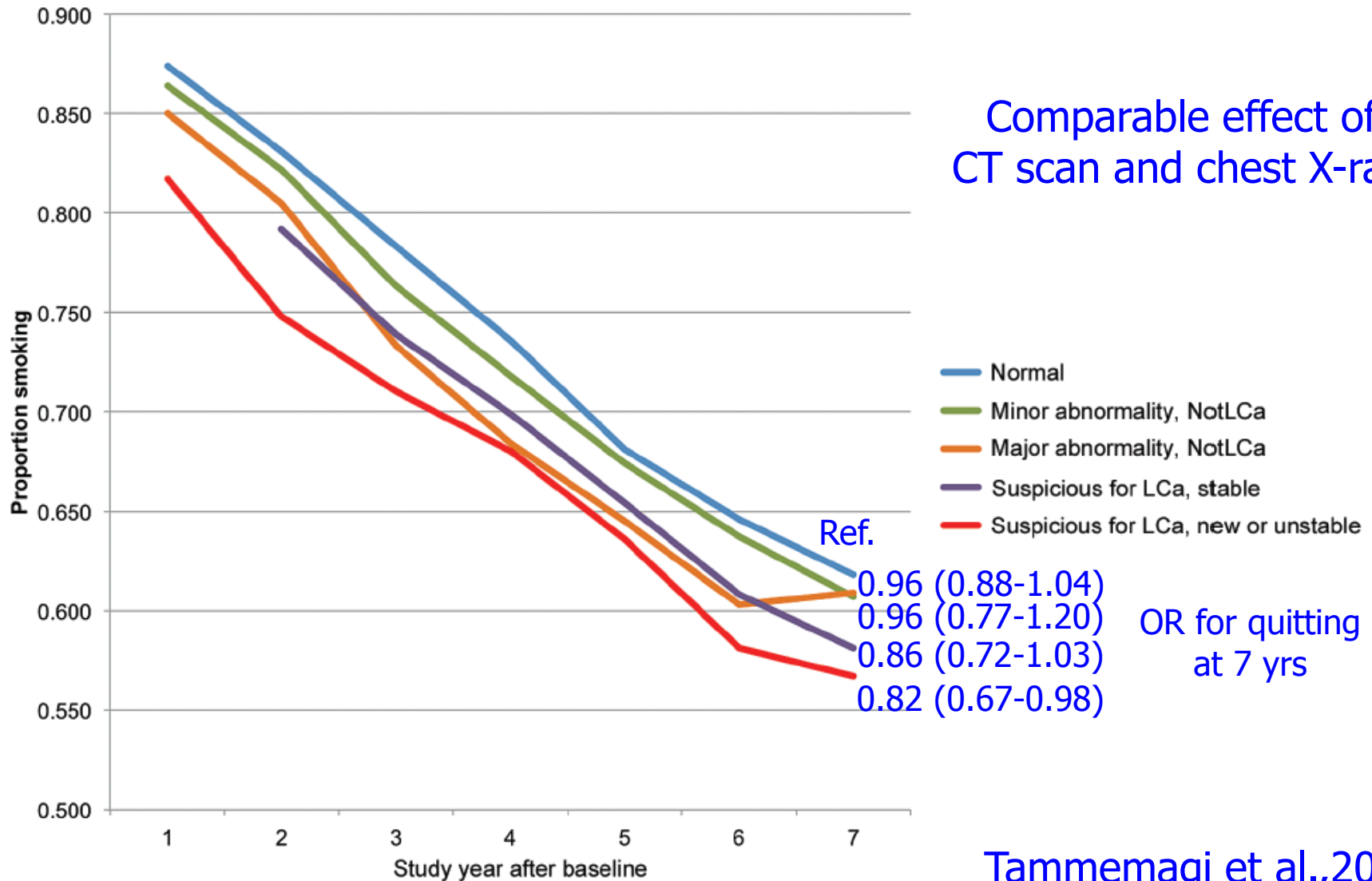
Quitting smoking in the NELSON trial - 2

- 938 smokers in NELSON (screening arm)
 - 419: only negative results
 - 519: one or more undetermined results
- OR for undetermined vs. negative results
 - Prolonged abstinence: 1.3 (0.9, 2.0)
- More quit attempts after undetermined results
- No effect of a tailored smoking intervention

Quitting smoking in the Mayo Clinic Trial

- One-year follow-up
 - odds ratio for quitting: 1.03
 - mean cpd
 - - 5.71 screening
 - - 5.69 control
- Six-year follow-up
 - decrease in cpd
 - 54% intervention
 - 57% controls

Quitting smoking in the NLST



Long-term quitting in screening studies

Study	Interval	Quitting rate	Screening vs. controls	Positive vs. negative
ELCAP	1 yr	29%	+6%	NA
DLCST	1 yr	12%	0%	+6%
NELSON	2 yrs	14%	+5%	+5%
NLST	1 yr	15%	NA	+5%
NLST	7 yrs	40%	NA	+5%

Conclusions

- Need for long-term follow-up data on smoking cessation in populations undergoing lung cancer screening
- Screening as opportunity for tobacco cessation intervention
- Lack of evidence to support screening-specific interventions