LDCT Lung Cancer Screening, Harms, and Asbestos exposure

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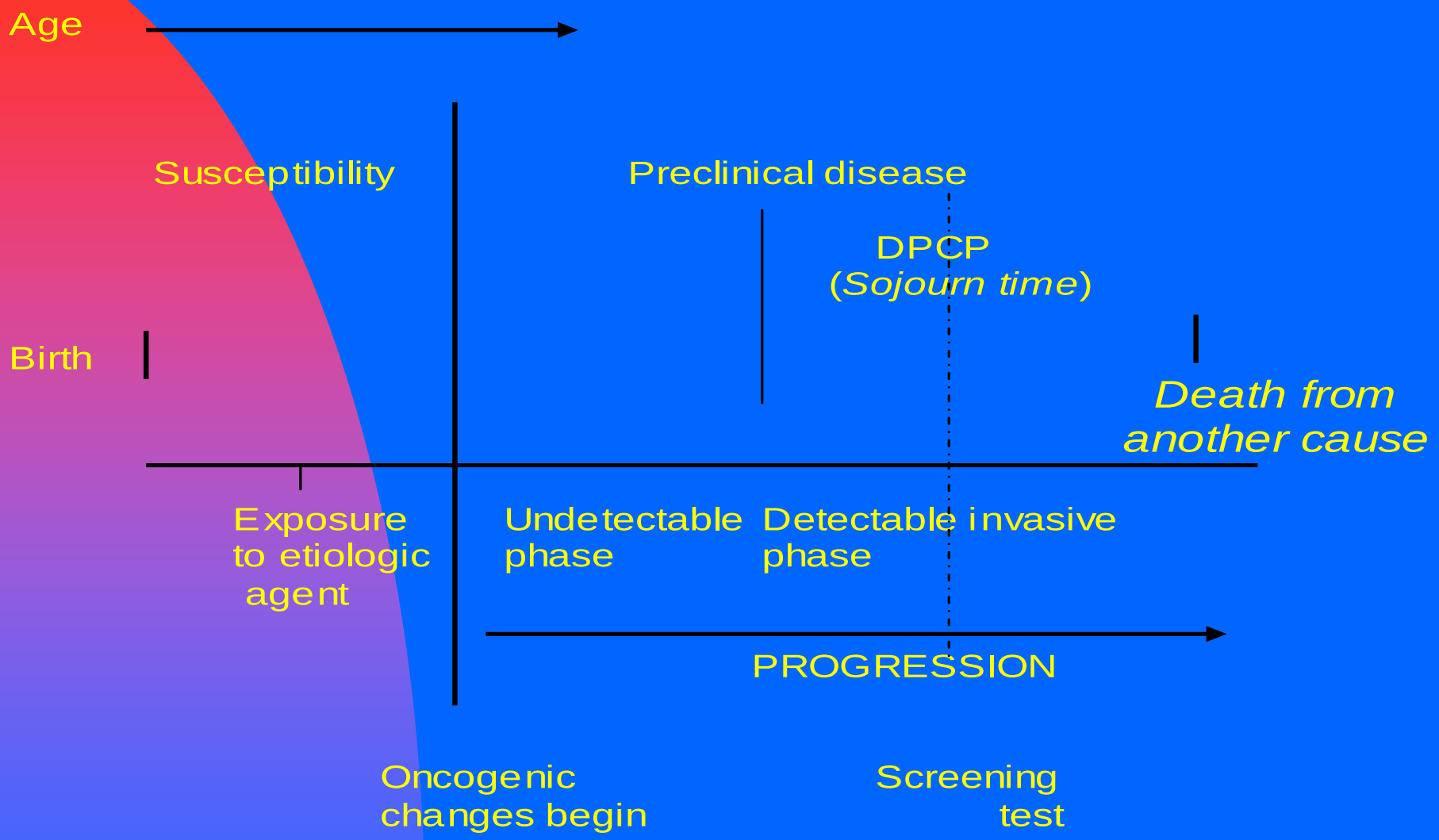
Potential Harms from LDCT Screening

- Hazard from the test
- False reassurance from false negative test
- Large numbers of false positive tests (low specificity)
- Complications from investigation of false positive tests
- Earlier experience of “life with cancer” from true positive detection without extension of lifespan (lead time and overdiagnosis) together with:
  - Complications of unnecessarily early therapy
  - Costs of unnecessary screening, diagnostic tests and treatment
- Opportunity costs

Hazard from the test

- LDCT involves substantially more radiation than for Chest X-rays
- Repeat (diagnostic) CT will add to the radiation dose in those positive to the test
- There is a possibility of a multiplicative interaction between smoking and radiation in the induction of lung cancer

Overdiagnosis



Definition of Overdiagnosis

The detection by screening of a cancer that was not destined to present clinically in that individual in his or her lifetime

This does not mean that the cancer is not a true cancer – it may be histologically indistinguishable from other cancers, but competing causes of death kill the patient before the cancer can.

Over-diagnosis in NLST: LDCT vs. CXR

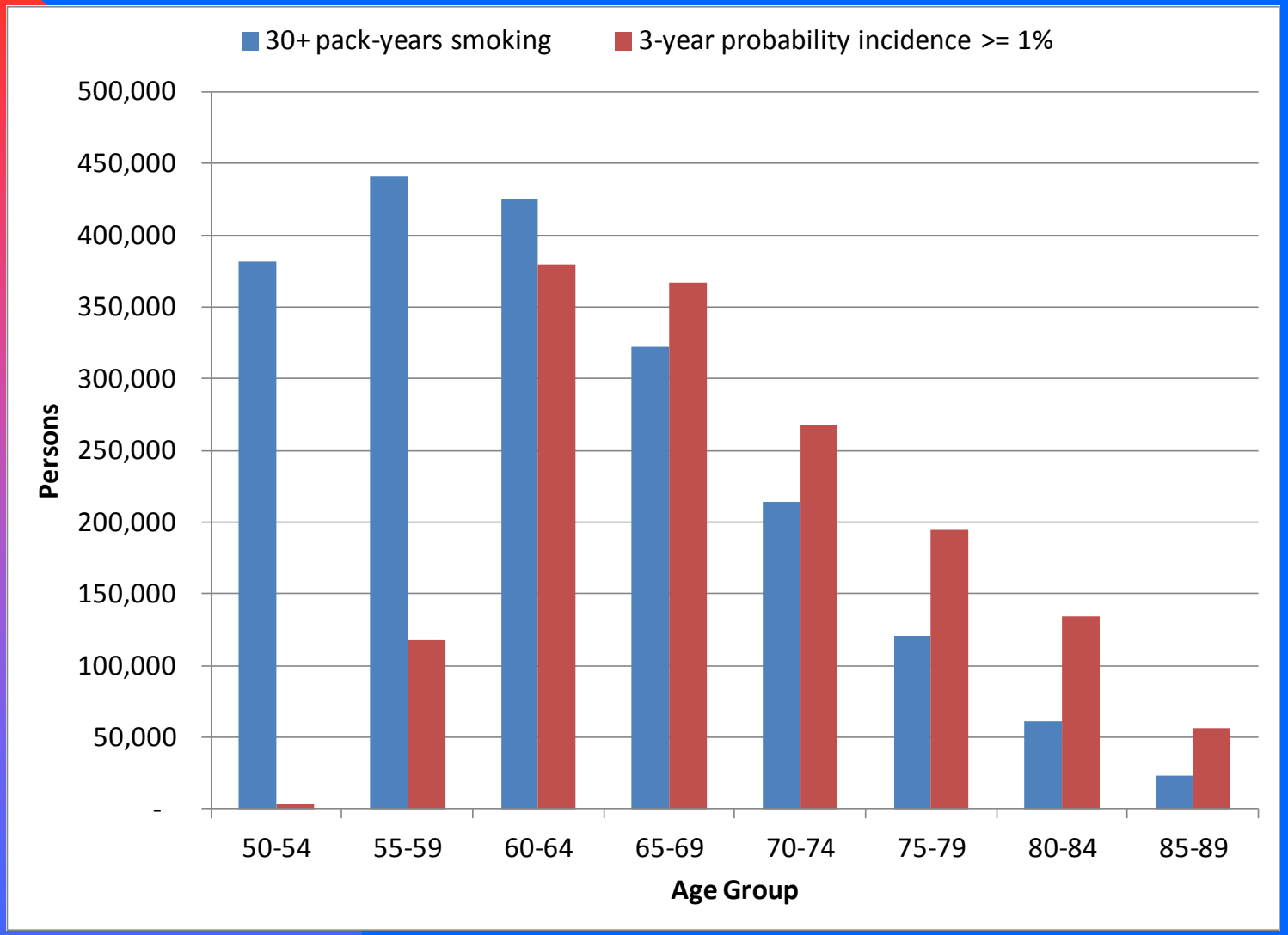
	LDCT	CXR
Screen-detected LC	649	279
Total LC ascertained during follow-up	1089	969
Excess in LDCT	120	
Screen-detected LC over-diagnosed	18%	

Opportunity costs of LDCT screening

Resources used could reduce those available for diagnosis and management of symptomatic patients

New funds required for a screening program could divert funds from primary prevention, especially smoking cessation in current smokers

Lung Cancer Screening Eligibility Criteria



Conclusions on modeling LDCT screening of asbestos-exposed workers:

- Individuals who have accumulated 30 pack-years of cigarette smoking are eligible for LDCT screening once they have reached the age of 55, irrespective of their degree of asbestos exposure. If they have stopped smoking, cessation should be no more than 15 years ago.
- Asbestos-exposed individuals with an estimated two-fold or more risk of lung cancer from asbestos-exposure are eligible for LDCT screening at all ages from 55 to 74 if they have a history of 15 pack-years or more of cigarette smoking.
- Asbestos-exposed individuals who are lifelong non-smokers are eligible for LDCT screening at all ages from 55 to 74 if they have accumulated a degree of asbestos exposure resulting in a relative risk of lung cancer of 10 or more.