Varese Province Cancer Registry: Population based case-control studies.

RR of lung cancer by tobacco consumption and occupational exposure to lung carcinogens (Pastorino & Berrino, Int J Cancer 1984)

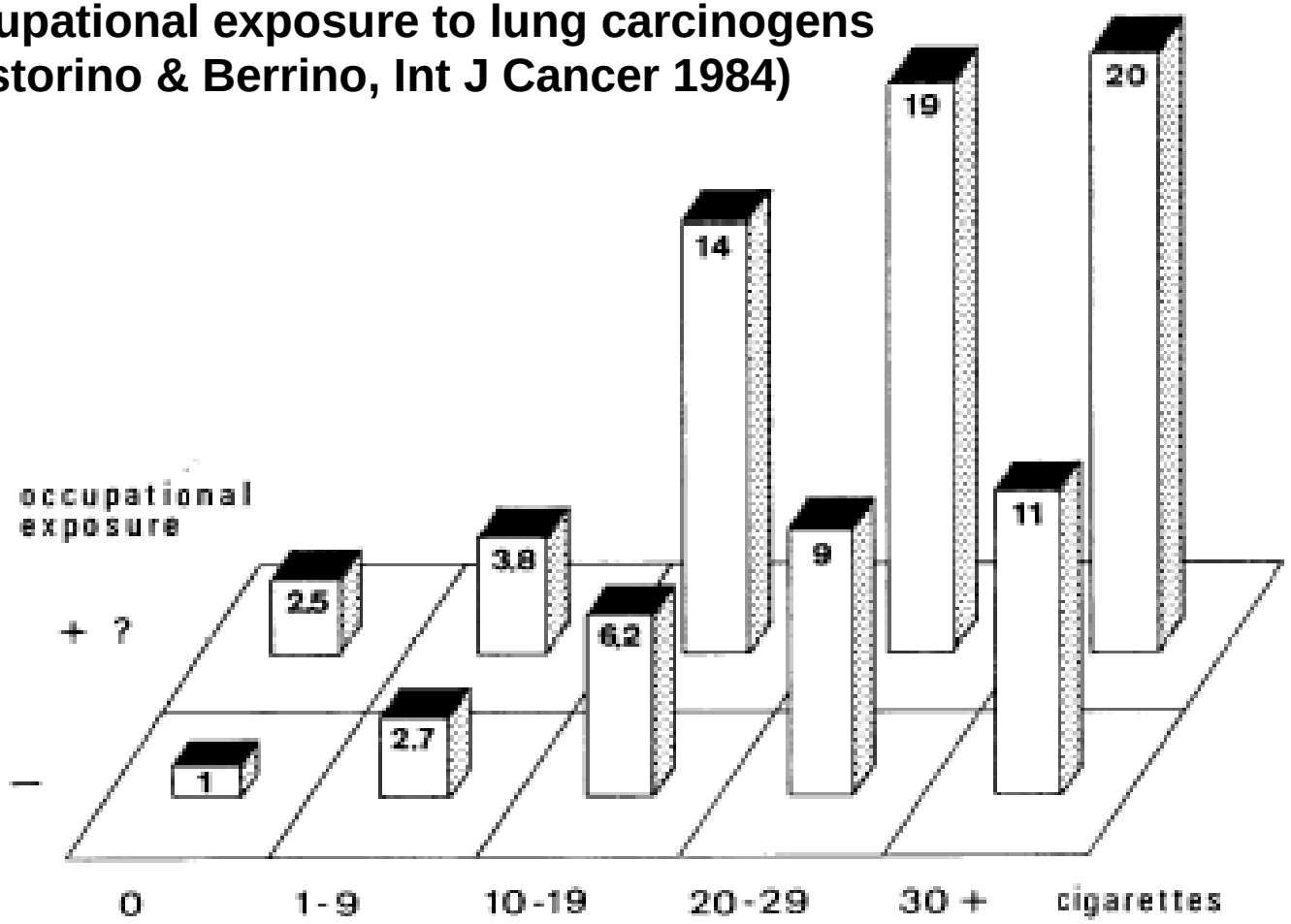

FIGURE 1 – Risk ratios by occupational exposure and daily tobacco consumption.

Occupational Cancer Monitoring (OCCAM)

- Aim: Systematic and ACTIVE Monitoring of occupational cancer risks to protect the workforce and the general population :

- The search for “old” risks. They can be still actual (e.g. lung cancer and road transport)
- Identification of “new” risks (e.g. shift work and breast cancer)
- Identification of cases of occupational origin

This monitoring is mandatory in Italy

- Managed by National Institute for Occupational Health (ISPESL)
- Based on a set of regional centres that:
- For cancers of high occupational etiologic fraction (mesothelioma and nose) perform the active search of all cases and the assessment of occupational exposure
- Carry out a systematic survey on risks of low etiologic fraction tumors (larynx, lung, bladder, leukemias…) by linking population cases WITH the information on occupation recorded by the Social Security

Exposure: the information from the Social Security Archives

For each subject with employment in the private sector and for each year from 1974:

- Firm name and code of its economic activity
- E.g.: “exposed” to textile are all those who worked in a firm coded as “textile”
- Job title: not available
- Similar economic activities are grouped

OCCAM: estimation of risks by area, site and economic activity

Methodology: population-based case-control studies where:

- **Incident Cases: 35-69 from available sources (Cancer Registries, Hosp Discharge Records)**
- **Controls: from population health service files**
- **Exposed: those with main employment in an economic sector (e.g. foundry, textile…)**
- **Non-exposed: those employed in the retail sector only**
- **Study base: people WITH occupational info**

OCCAM

- Cancer Registries (all sites):
  - Population-based
  - All neoplasms
  - High quality of diagnosis
  - Not all areas are covered
  - Data are available after 2-4 years

→ validation of the method and hypotheses generation

- Hospital discharge records (low fraction only)
  - All hospitals in all Italian regions
  - Quickly available
  - Quality of Diagnosis

→ Risk mapping by area gender and site

→ Active search for occupational cases

4 Cancer Registries, Health employees, Females

Site	RR	90%L	90%U	No of cases/ctr
Liver	4.40	1.64	11.83	4/427
Breast	1.24	0.96	1.61	50/427
Cervix	1.82	0.74	4.44	4/427
Bladder	1.73	0.61	4.96	4/427
Kidney	3.35	1.25	8.99	4/427

OCCAM outcomes (HDR & CR)

- Area risks by gender, cancer site, economic activity.
- A set of cases with occupational history; to be explored to identify those of possible occupational origin by:
  - The “current” knowledge of occupational risks
  - The firm where they worked
- A SW to explore the data set by site, activity, firm…

Hospital discharge records

(Lombardy region, 2002-2006; bladder, lung, larynx, leukaemia)

- Cases considered by the 14 Occupational Health Services: 271
- Correct diagnosis and incidence: 240 (88.6%)
- Likely of occupational origin: 102 (37.6%)

La Spezia, HDR 2005-2006 Ship Building

	#	RR
Larynx	5	2.30
Lung	19	1.73
Pleura	11	4.94
Bladder	9	1.32

A bladder cancer cluster in a rubber industry: HDR 1990-2000

- 17 cases and 12 in the same firm
- RR = 1.46
- Search for more cases 2001-2006
- 17 cases in the same firm
- 1 err diagnosis, 6 not traced
- 4 non occupational
- 6 occupational

OCCAM-Literature Matrix

- To read OCCAM results (incidental findings vs plausible associations)
- To provide a tool for risk and hazards identification
- 870 papers from 70 journals
- 1870 “significant” associations site-economical activity
- 320 lung, 220 bladder, 128 leukaemia

OCCAM-GP: to recognise cases likely to be due to occupation

- Software: On-Line & Desktop
- For: GPs, Hospitals,
- Q1: SITE
- High fraction (i.e. mesotheliomas, nose, liver AS): notification
- Low fraction: larynx, lung, bladder, leukaemia
- Q2: Economic branch
- Other sites: link to matrix

Occam coordinates

- WEB: www.occam.it
- E-mail: occam@istitutotumori.mi.it
- Head: Paolo Crosignani, MD, Cancer Registry and Environmental Epidemiologu Unit.
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  I-20133, Milano, Italy
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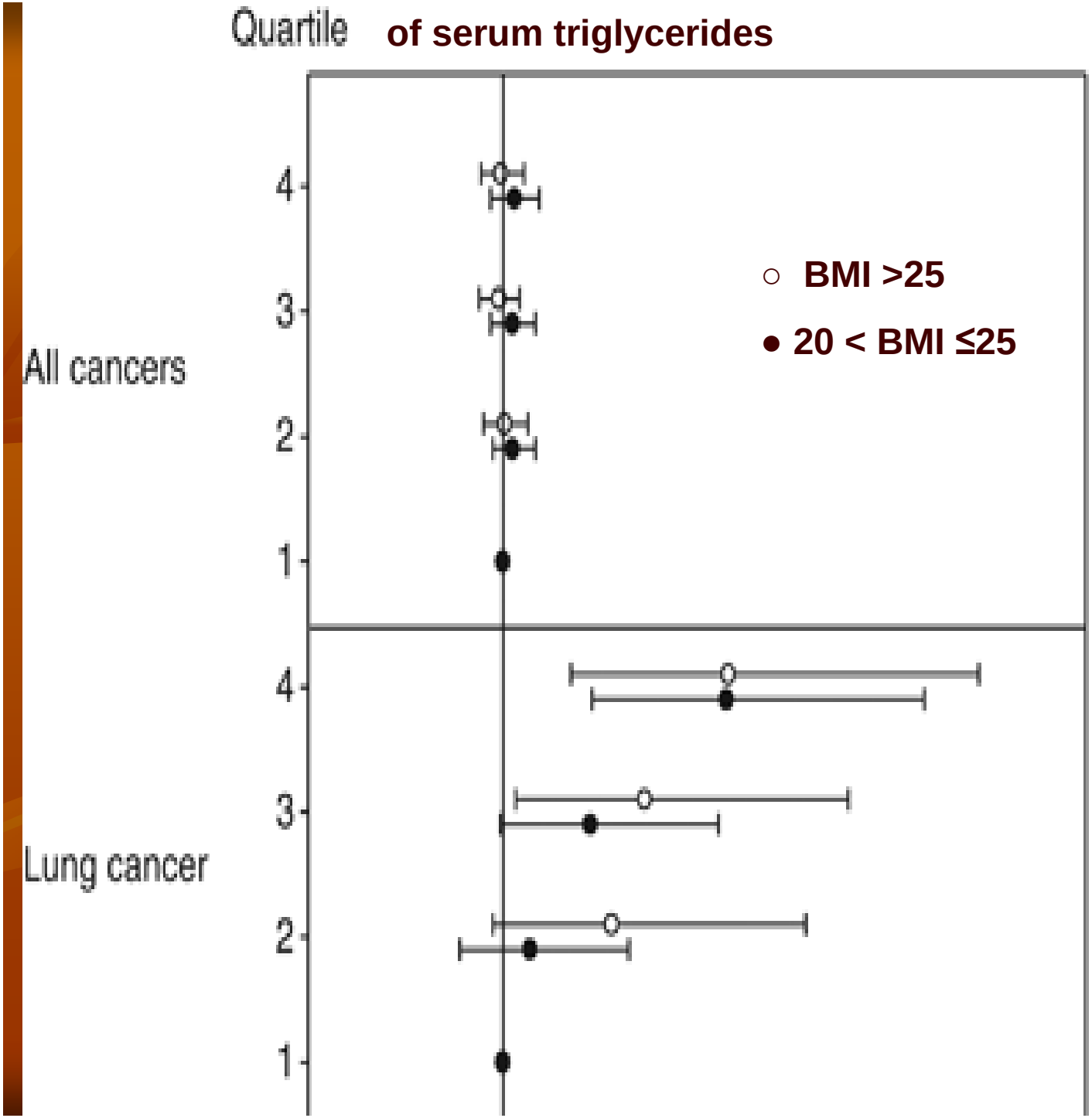


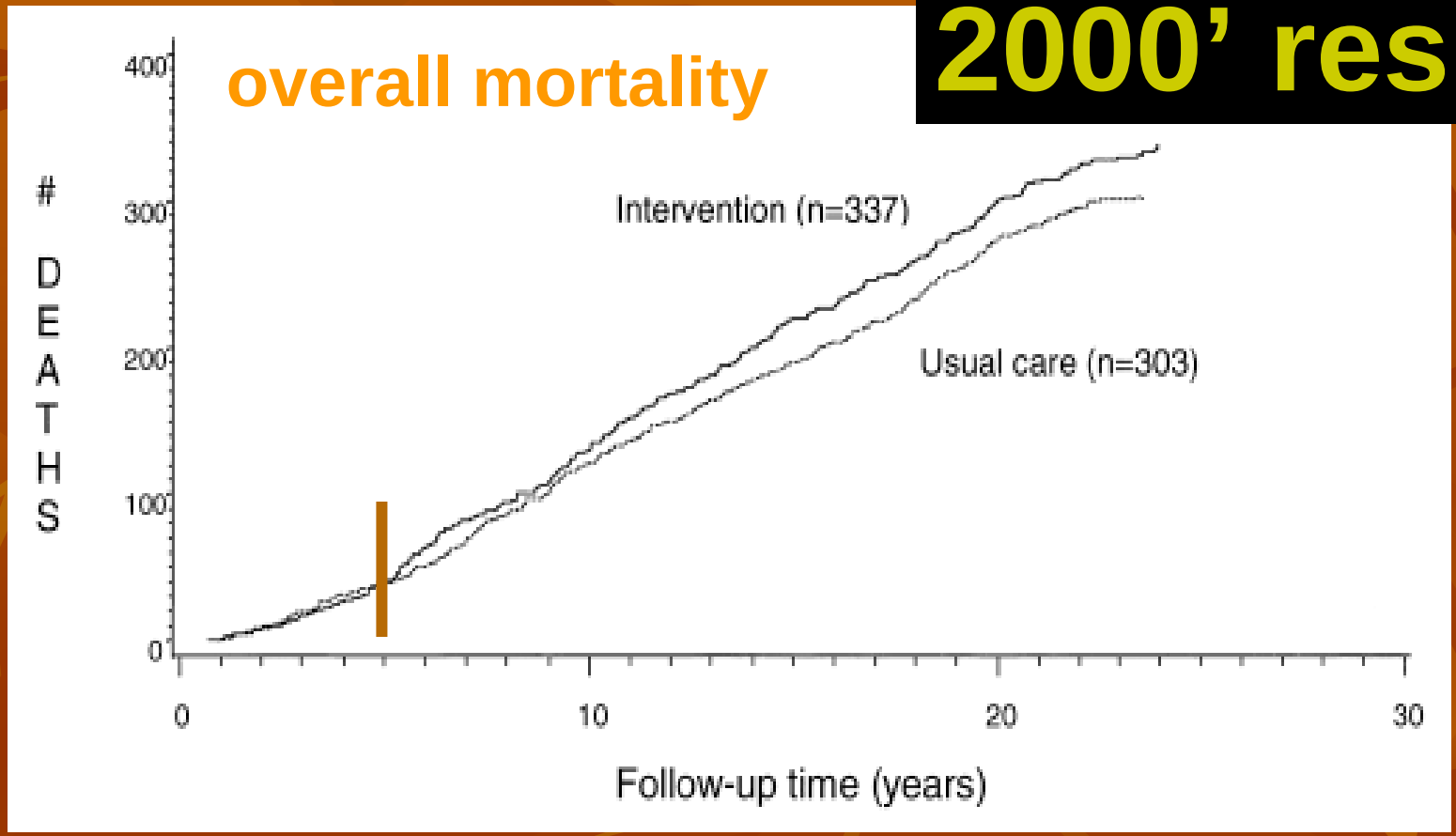
Concentrazione sierica di trigliceridi e rischio di cancro in una grande coorte austriaca.
H Ulmer, BMJ 2009

Adjusted for BMI, GGT, serum glucose , total cholesterol, smoking status, occupational status, and sex

Mayo Lung Project

chest x-ray 4 monthly vs. control
9211 smokers, 1971-1983

2000' results



JNCI 2000; 92:1308-

Mayo Lung Project

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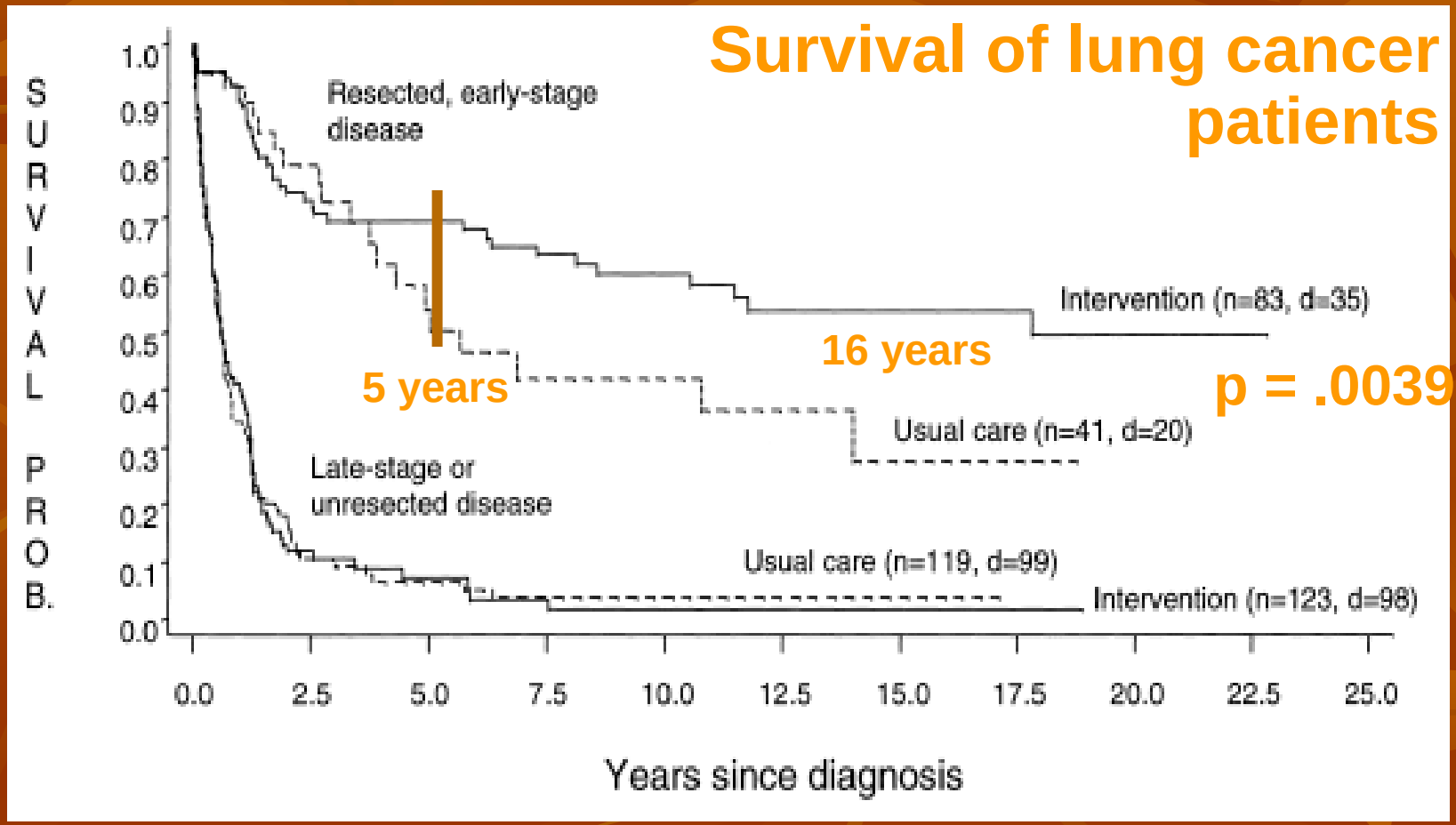


JNCI 2000; 92:1308-16

Mayo Lung Project

Cumulative incidence of lung cancer

(Number of cases)

Year	Intervention	Control	Δ
5	132	88	44
10	256	204	52
15	338	276	62
20	425	360	65
25	486	418	68
27	491	422	69

Fontana JNCI 2006

Screening with spiral CAT

Dante Study

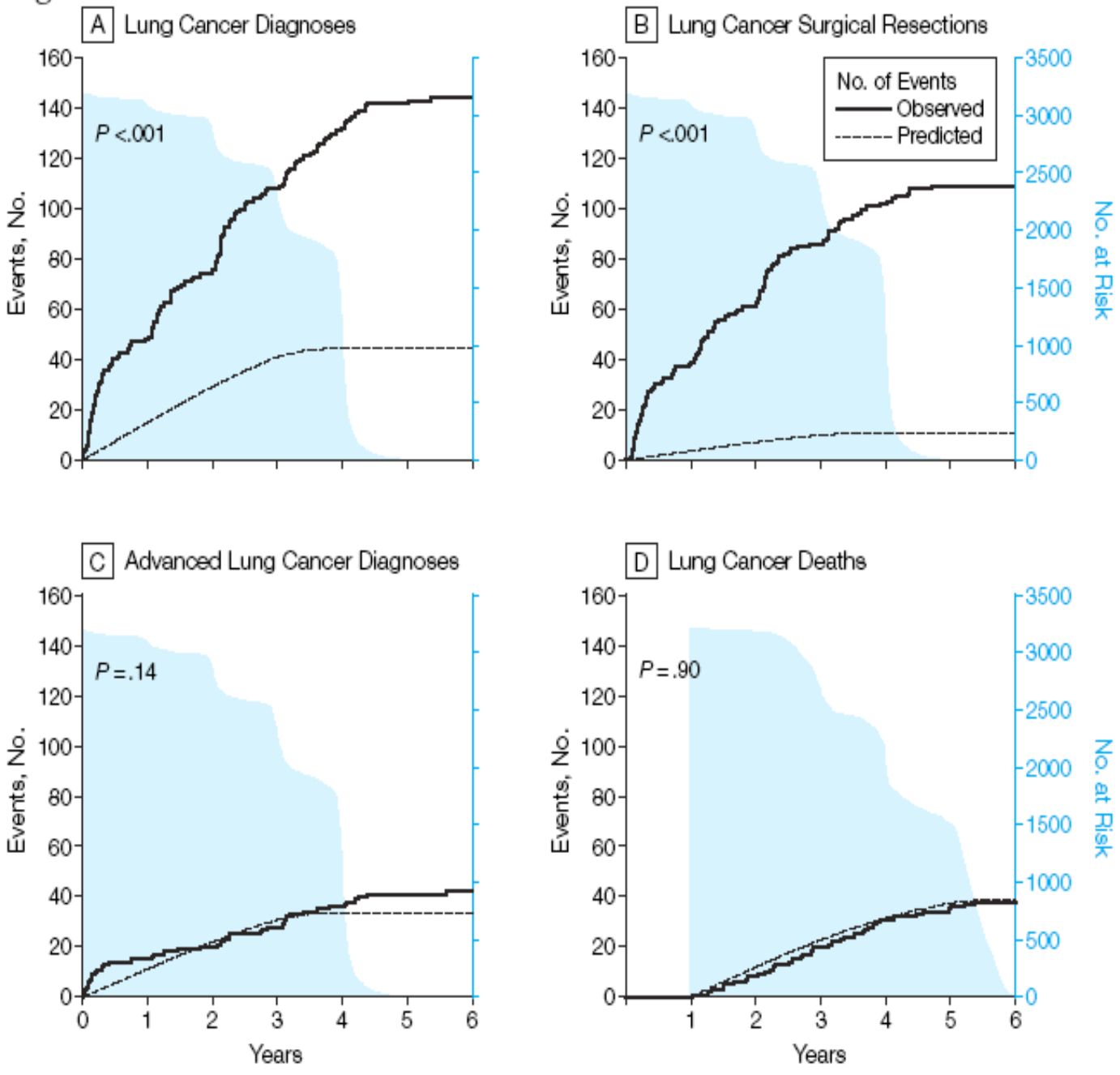
Lung cancers p=0.016	60 (4.7%) vs 34 (2.8%)
Cancer deaths:	20 vs 20
Other deaths:	26 vs 25

What This Study Adds to the Field

In this randomized trial, more lung cancers and three times as many stage I patients were found using LDCT. However, three-year follow-up data suggest that the effect of screening with LDCT on lung cancer mortality might be smaller than anticipated.

AMERICAN JOURNAL OF RESPIRATORY AND CRITICAL CARE MEDICINE VOL 180 2009

Figure 2



JAMA

JAMA 2007; 297:953-961

ATOM 002

Diagnostic findings: malignancies

Type of surgery	diagnosis	pTN
Lobectomy	bronchioloalveolar carcinoma	T1N0
Lobectomy	bronchioloalveolar carcinoma	T1N0
Lobectomy	bronchioloalveolar carcinoma	T1N0
Right pneumonectomy	carcinosarcoma	T2N0
Lobectomy	bronchioloalveolar carcinoma	T1N0
Lobectomy	adenocarcinoma	T1N0
Diagnostic VATS	malignant pleural mesothelioma	T4N0
Sternotomy	thymic carcinoid	N/A
Lobectomy	adenocarcinoma	T2N0

VATS: videoassisted thoracoscopy

ATOM group

ATOM 002

Diagnostic findings: benign lesions

Type of surgery	diagnosis
VATS wedge resection	anthracotic lymph node
VATS wedge resection	anthracotic lymph node
VATS wedge resection	anthracotic lymph node
VATS wedge resection	lymphoid infiltrate
VATS wedge resection	bronchiectasis
VATS lobectomy	inflammatory pseudotumor
VATS wedge resection	round atelectasis
VATS wedge resection	anthracotic lymph node
VATS wedge resection	atypical adenomatous hyperplasia
VATS wedge resection	adenoma

VATS: videoassisted thoracoscopy

ATOM group