

Update on CT Lung Cancer Screening in Japan

Ryutaro Kakinuma, MD

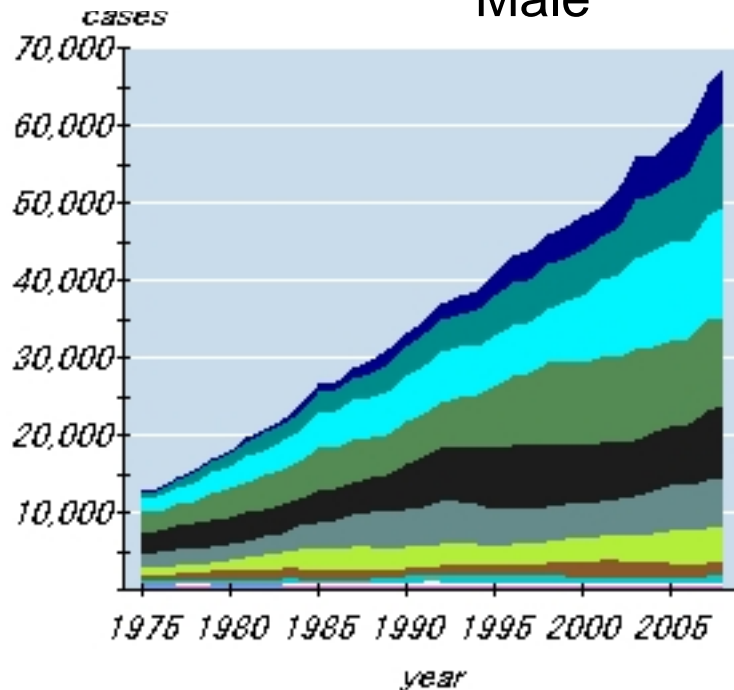
**National Cancer Center
Research Center for Cancer Prevention and Screening
Tokyo, Japan**

Disclosure slide

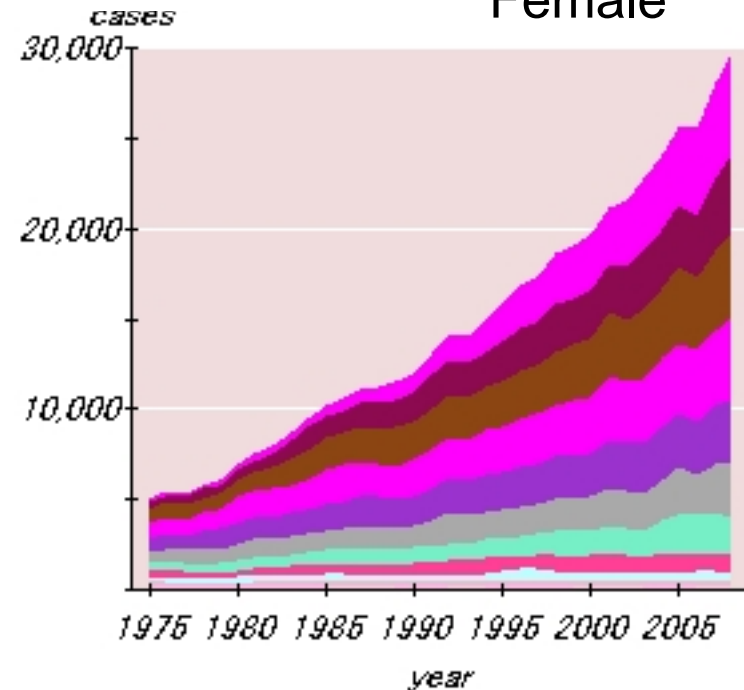
- **Nothing to Declare**

Trends in Incidence of Lung Cancer According to Age 1975 - 2008

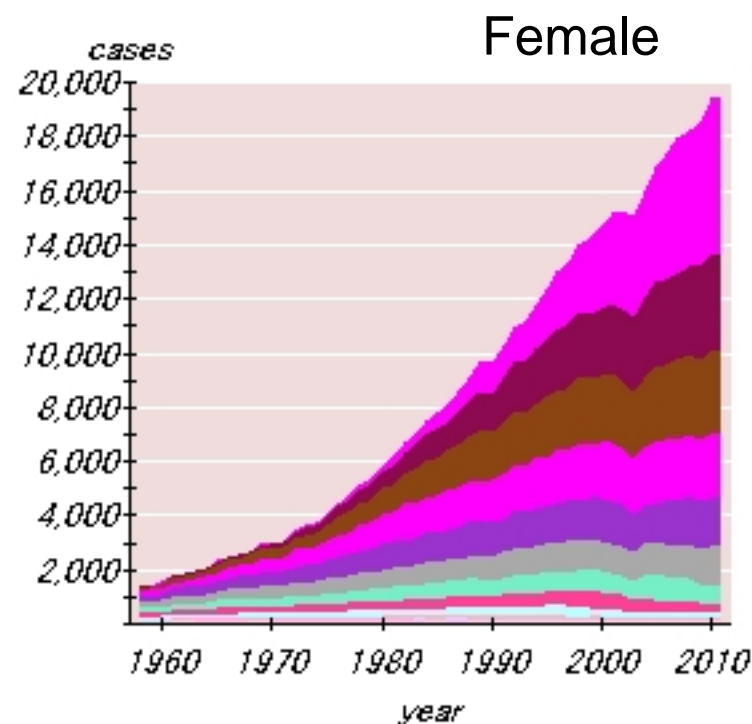
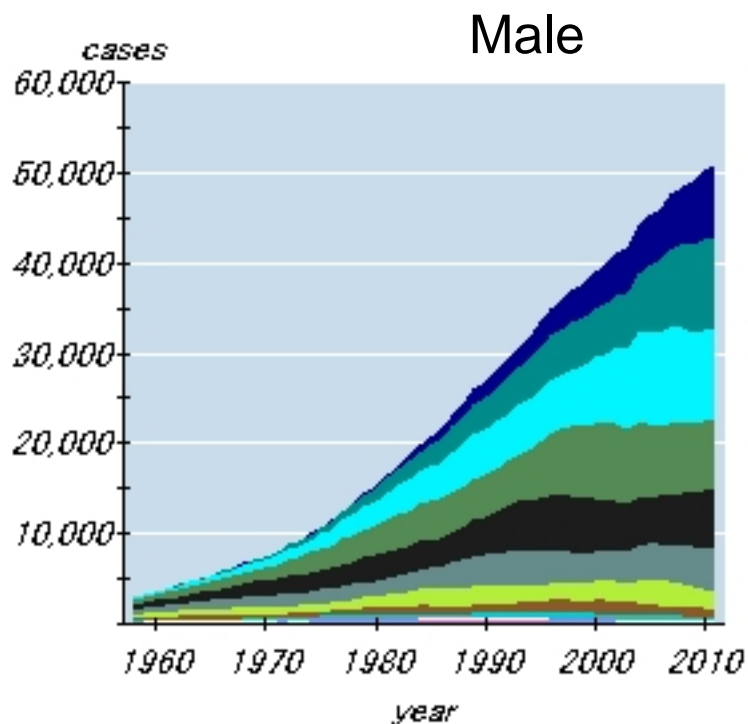
Male



Female

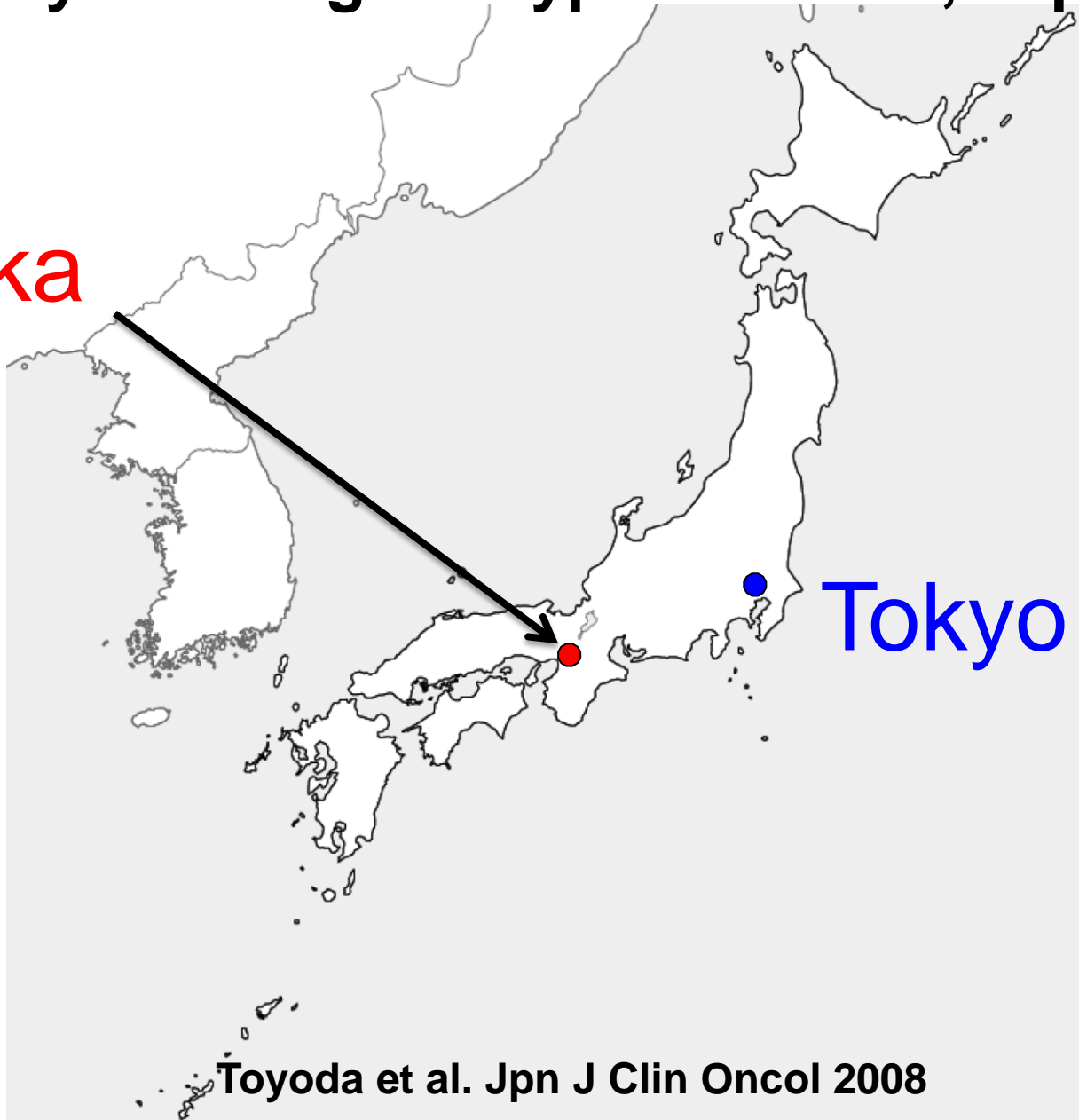


Trends in Lung Cancer Mortality According to Age 1958 - 2011



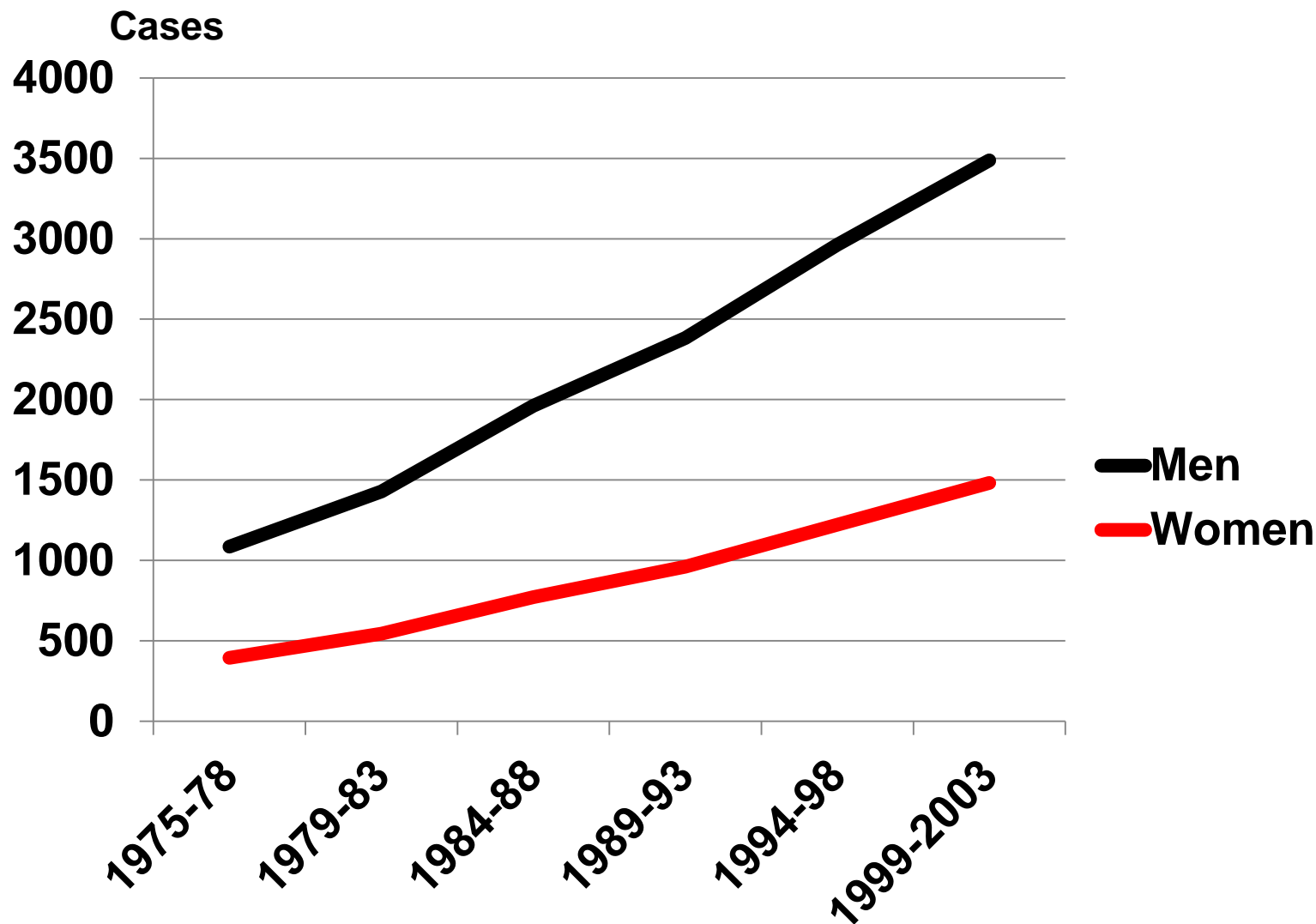
Trends in Lung Cancer Incidence by Histological Type in Osaka, Japan

Osaka



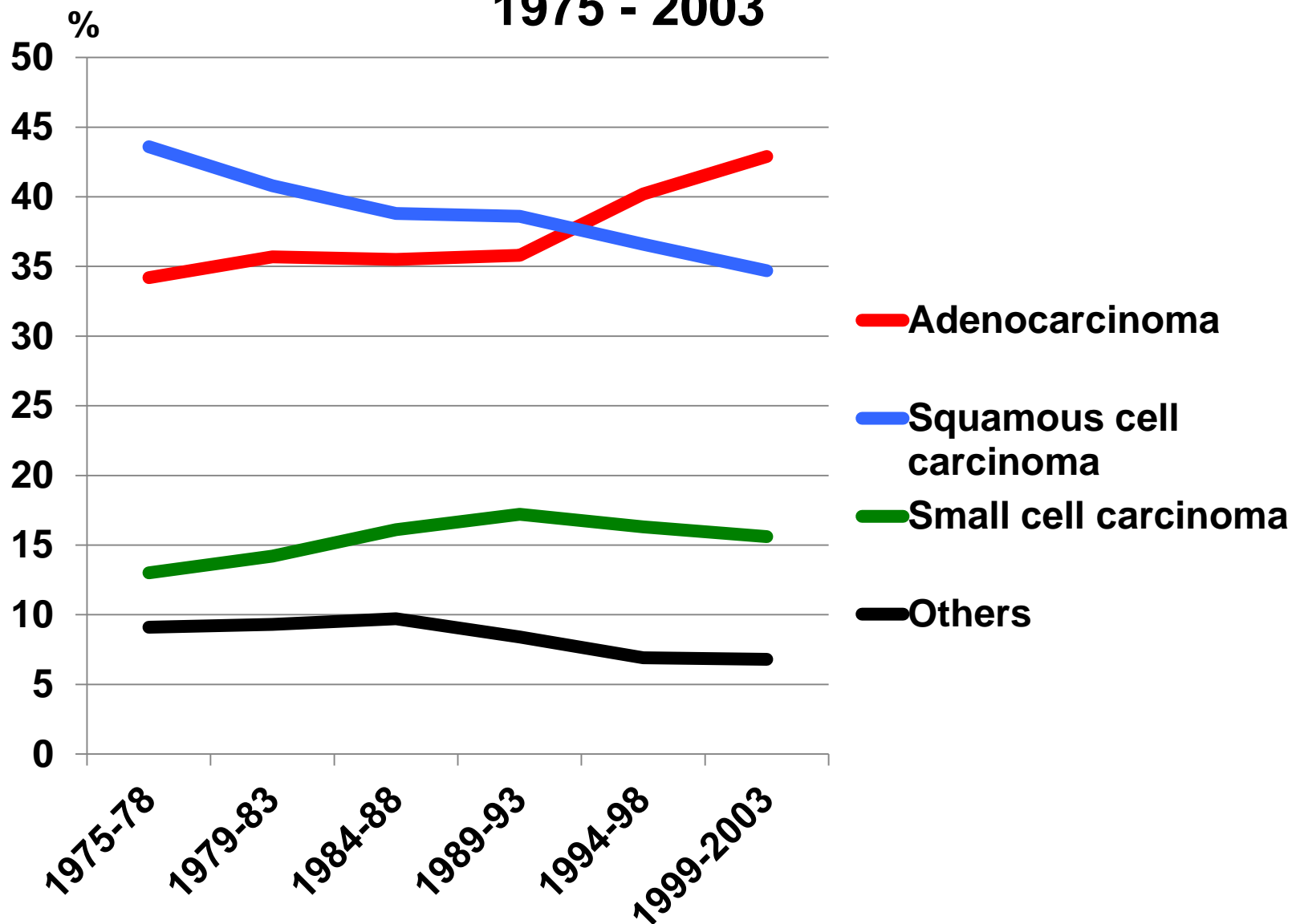
Tokyo

Trends in the Number of Lung Cancer Incidence Per Year According to All Histological Type in Osaka, Japan 1975 - 2003



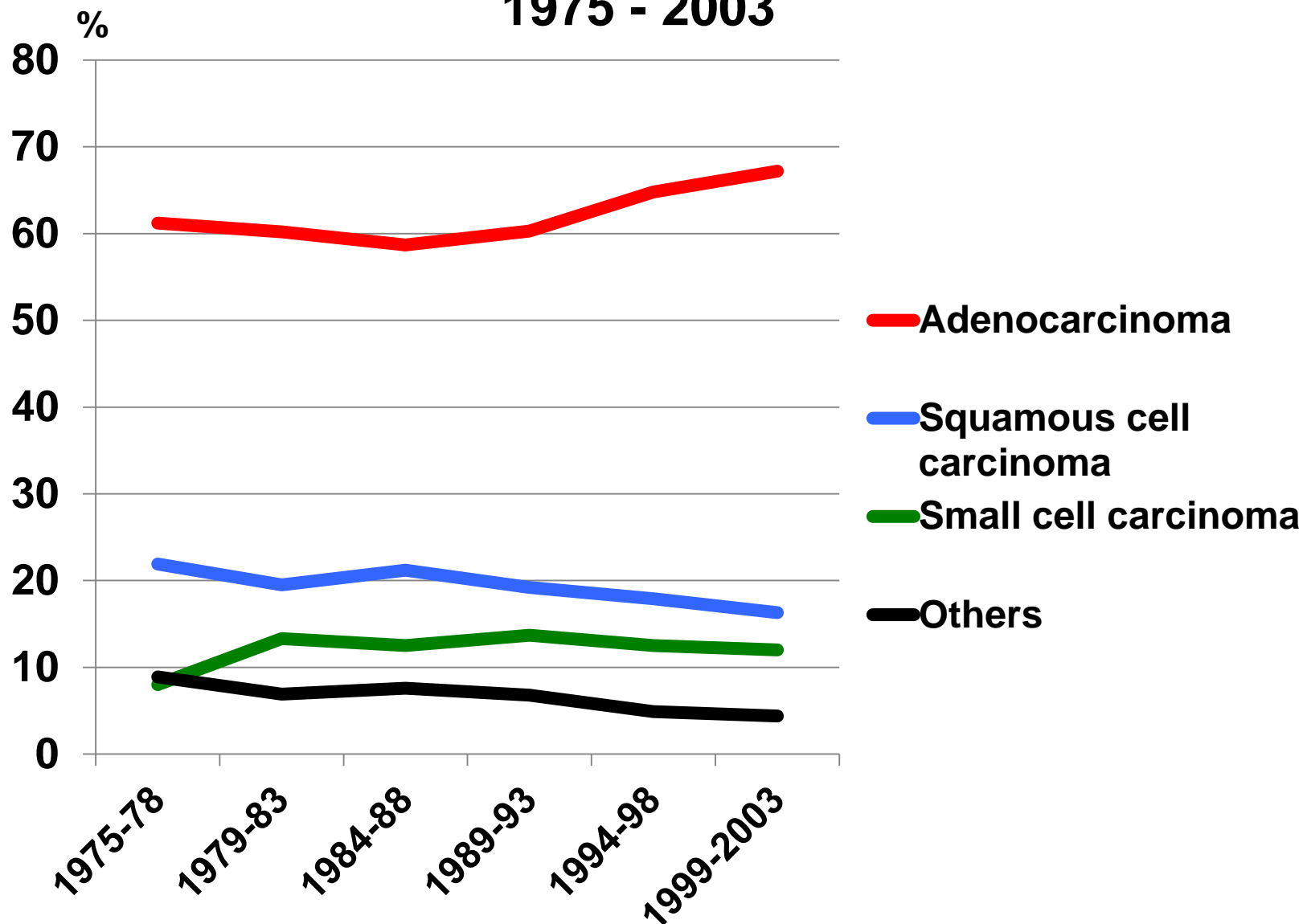
Trends in the Number of Lung Cancer Incidence Per Year According to Histological Type in Men

1975 - 2003

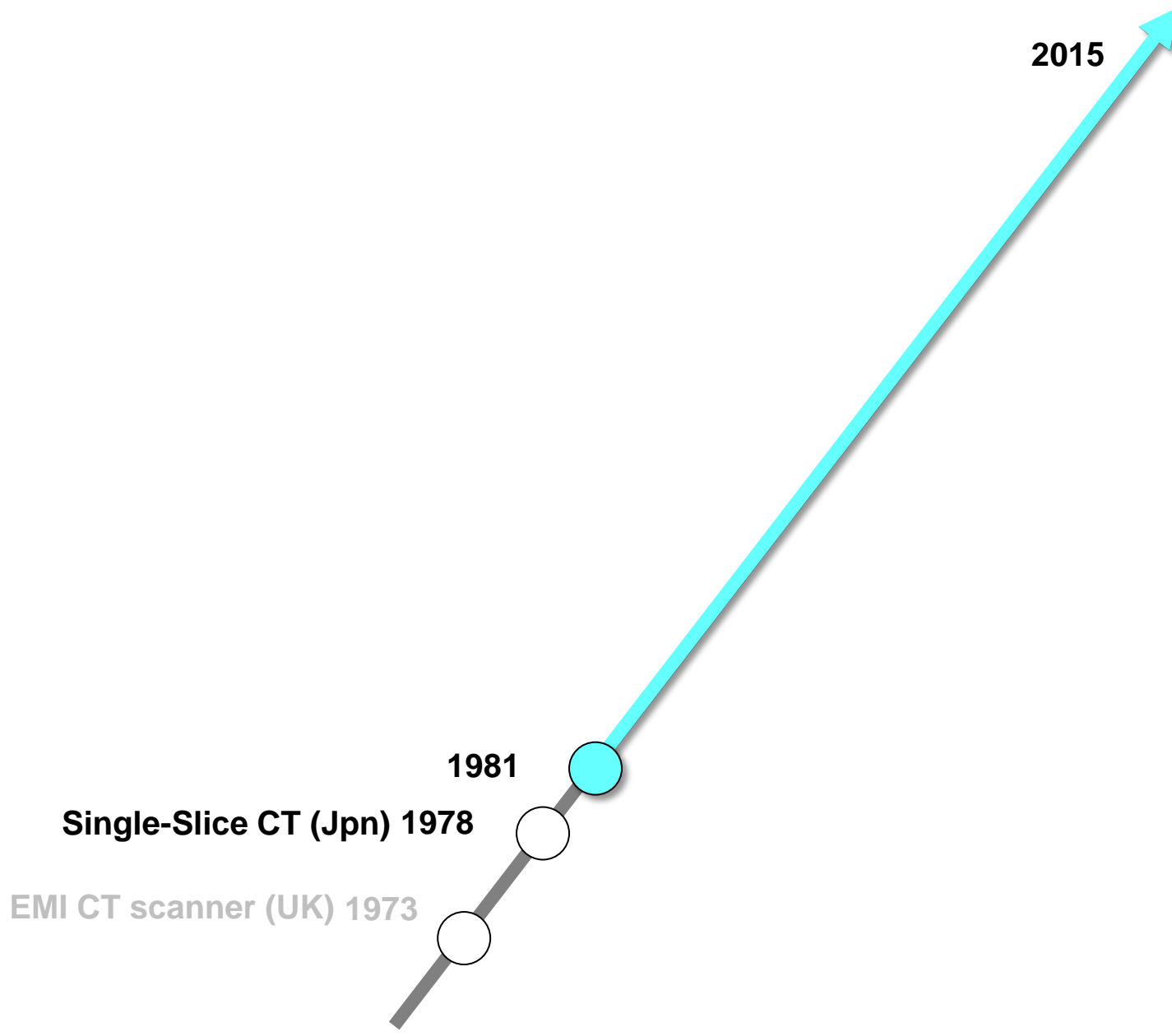


Trends in the number of lung cancer incidence per year according to histological type in Women

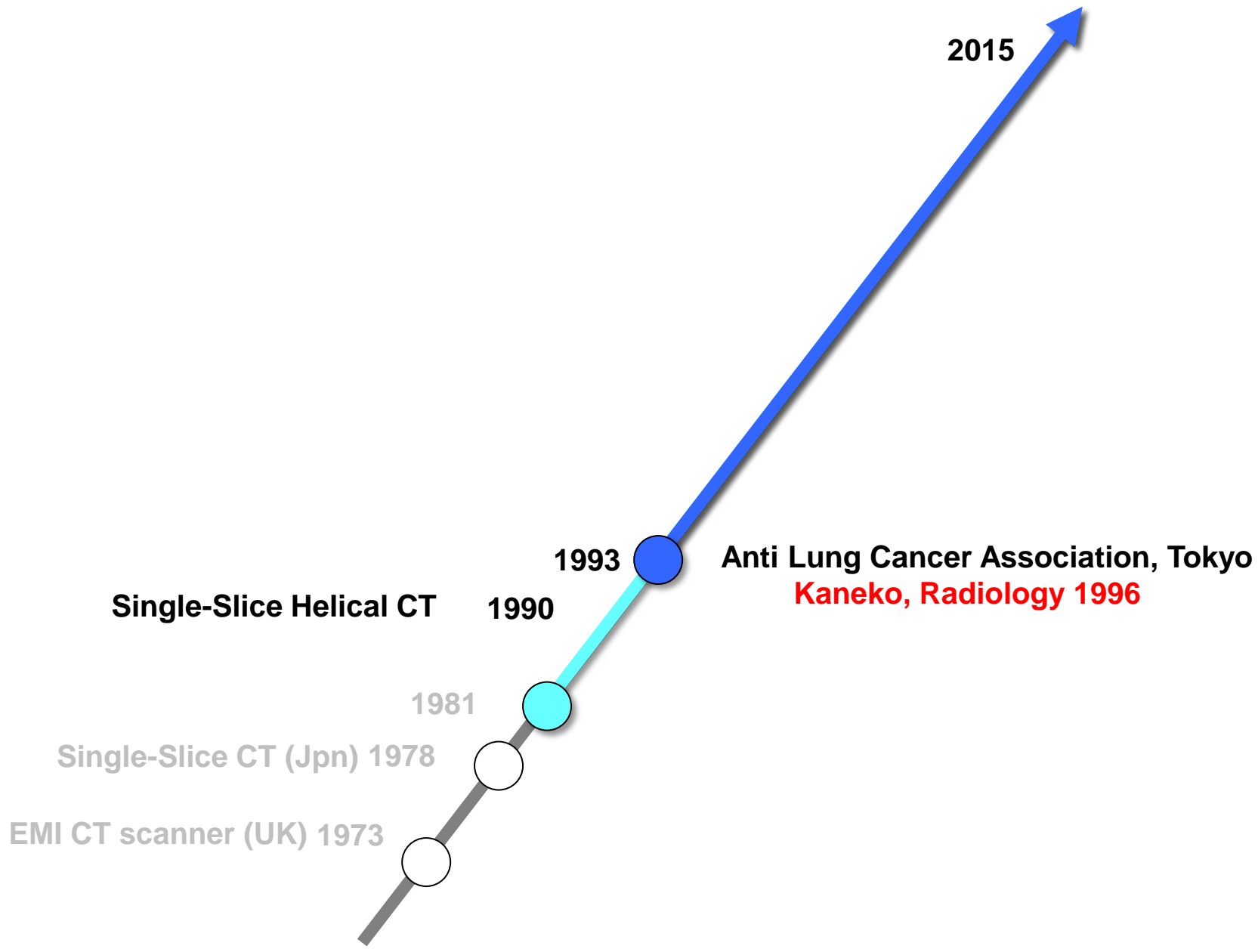
1975 - 2003



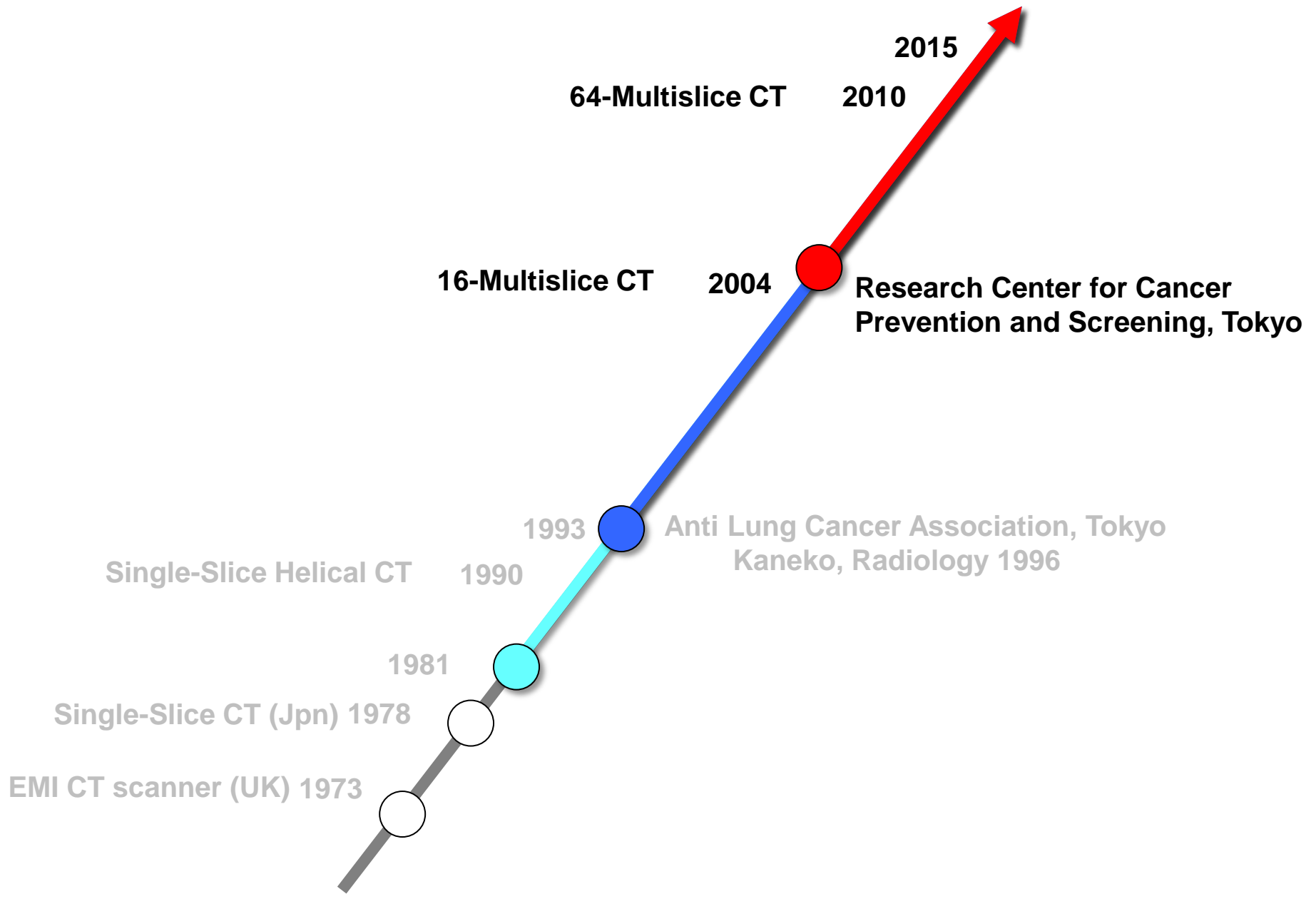
Experience in Reading of Chest CT



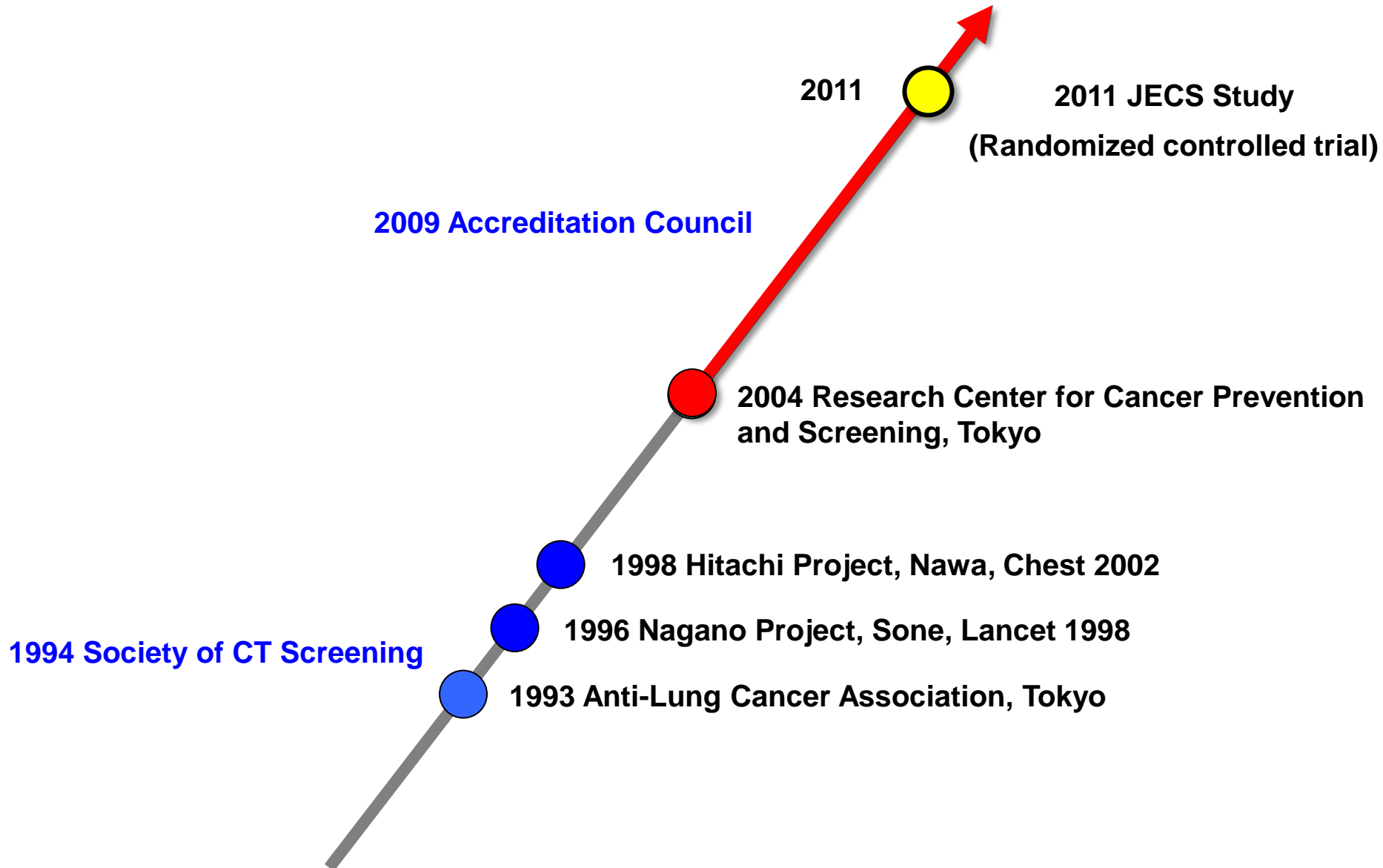
Experience in Reading of Chest CT



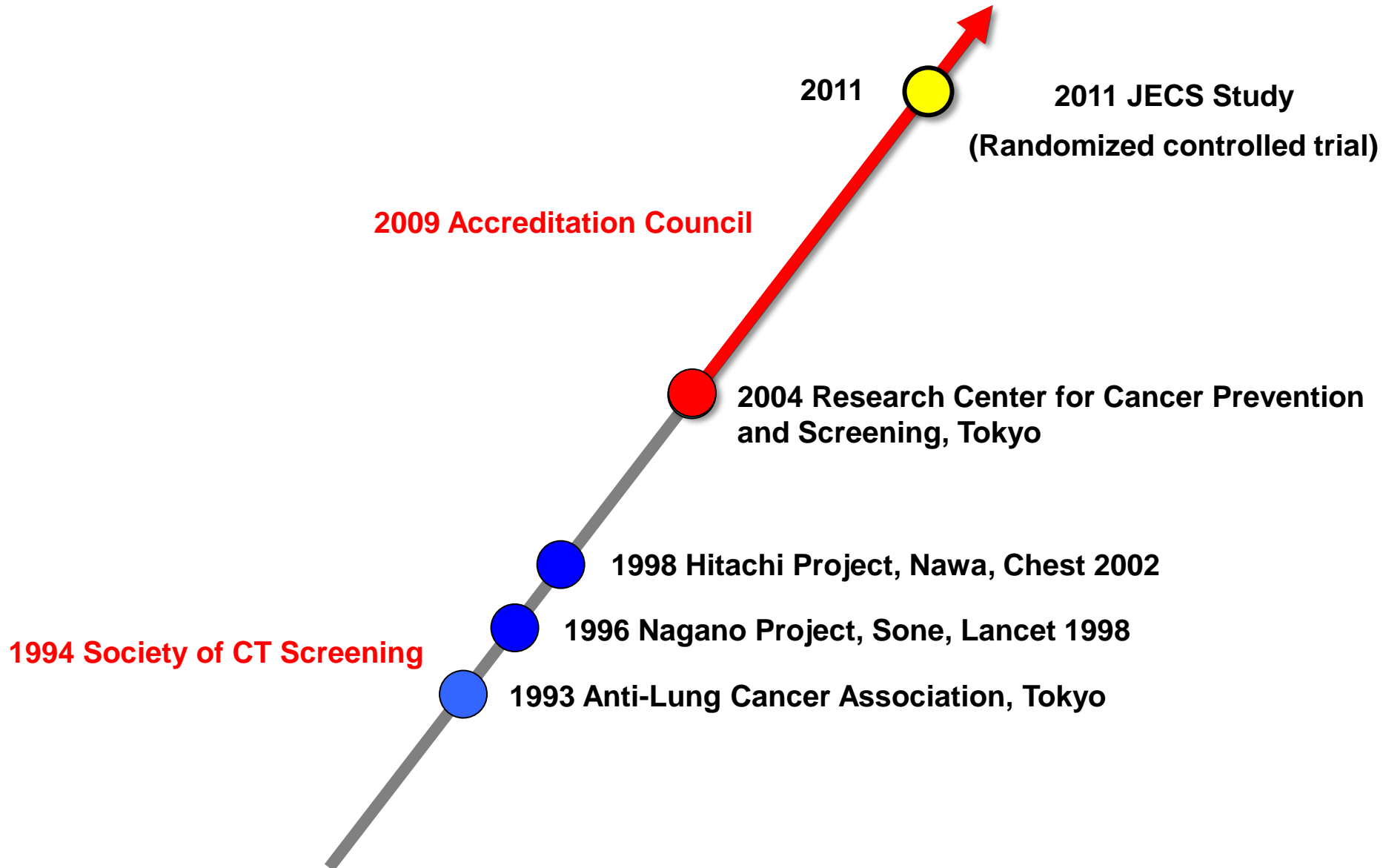
Experience in Reading of Chest CT



CT Lung Cancer Screening in Japan



CT Lung Cancer Screening in Japan



Japanese Society of CT Screening

<http://www.jscts.org/>



The screenshot shows the homepage of the Japanese Society of CT Screening (JSCTS). The header features the JSCTS logo and the text 'The Japanese Society of CT Screening'. Below the header, there is a navigation bar with links for 'サイト内検索' (Site Search), '検索' (Search), and 'ログイン' (Login). The main content area is divided into several sections: 'What's New' (updated 12.09.06), 'Topics' (updated 12.09.07), and a sidebar with links to various resources. The 'What's New' section lists recent updates, including the 110th issue of the newsletter and the 109th issue of the journal. The 'Topics' section lists the 110th and 109th issues of the newsletter and journal. The sidebar contains links to the homepage, about JSCTS, membership information, tobacco-free policy, seminars, academic meetings, journal, guidelines, software, literature, special committees, related links, and member pages. The footer includes the last update date (2012.09.07) and the contact information for the JSCTS Secretariat (〒102-0072).

JSCTS
The Japanese Society of CT Screening

現在の位置 : ホーム

サイト内検索 検索 ログイン

特定非営利活動法人 日本CT検診学会

What's New ▶ 更新履歴

- 12.09.06 メールマガジン第110号、第110号付録掲載 **New!**
- 12.08.06 メールマガジン第109号掲載
- 12.07.27 2013年夏期セミナーのお知らせ
- 12.07.26 肺がんCT検診ガイドライン更新
- 12.07.13 夏期セミナー2012のインナービジョン取材のお知らせ
- 12.07.06 メールマガジン第108号、108号付録掲載
- 12.05.30 メールマガジン5月30日発行臨時号掲載
- 12.04.04 メールマガジン第107号、107号付録掲載
- 12.04.04 第8回肺がんCT検診認定技師講習会開催および認定試験のお知らせ
- 12.03.16 第20回学術集会のお知らせ更新
- 12.03.05 メールマガジン第106号、106号付録掲載
- 11.03.16 東北地方太平洋沖地震被災地に対する車載型CT装置派遣について

Topics

- ▶ JSCTSメールマガジン第110号、第110号付録
 - ▶ メールマガジン2012年9月6日発行 第110号
 - ▶ メールマガジン2012年9月6日発行 第110号付録
- ▶ JSCTSメールマガジン第109号
 - ▶ メールマガジン2012年8月6日発行 第109号

Last Update : 2012.09.07 091997

日本CT検診学会事務局
〒102-0072

**Established
in 1994**

• **Scientific Meeting**

• **Seminar**

- Technologist section
- Emphysema section
- Nodule Management section

• **Journal
(in Japanese)**

Guidelines for Pulmonary Nodule Management

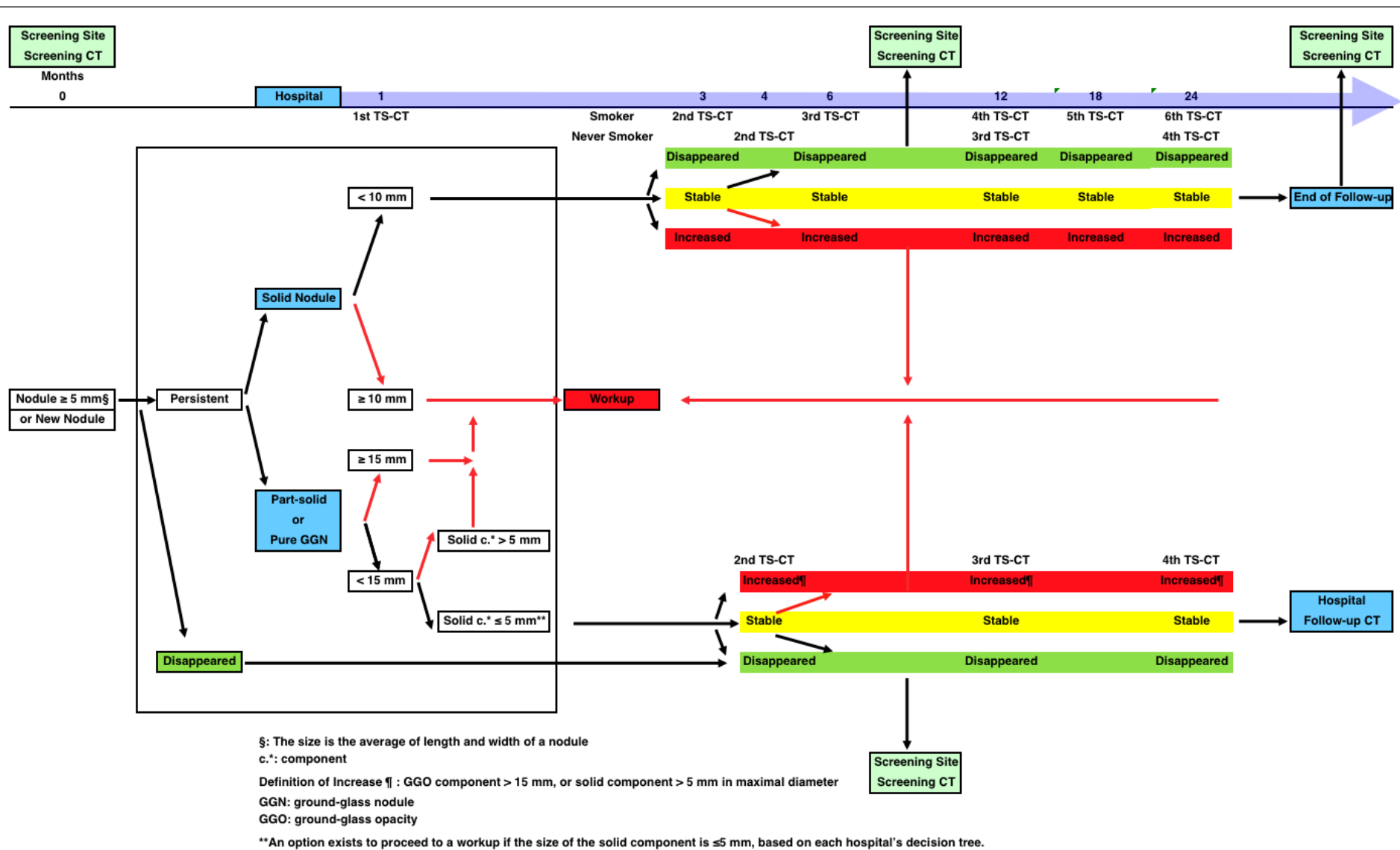


Figure 1. Guidelines for Pulmonary Nodules Management, Version 3 ©The Japanese Society of CT Screening

Accreditation Council for Lung Cancer CT Screening

<http://www.ct-kensin-nintei.jp/>

Established
in 2009

特定非営利活動法人
肺がんCT検診認定機構

Contents

- 設立の趣旨
- お知らせ
- 委員一覧
- 認定医師リスト
- 認定技師リスト
- トレーニング用フィルム
- リンク
- 事務局
- 組織・定款
- お問い合わせ

News & Topics

- 2011.10.13 E
・技師「認定単位となる学術団体リスト」を更新しました。
- 2011.10.3
・第7回 肺がんCT検診認定技師受講者へのご案内を掲載しました。
- 2011.9.30
・肺がんCT検診認定技師リストを追加掲載しました。（併せて認定証を本日発送致しました）
- 2011.9.21
・肺がんCT検診認定医師認定講習会（第52回肺癌学会付随）のお知らせを掲載しました。
- 2011.9.20
・技師メニュー「認定技師O&A」、「認定単位となる学術団体リスト」を掲載しました。

医師に関する情報はこちら 技師に関する情報はこちら

ご挨拶

このたび、肺がんCT検診認定機構は東京都から特定非営利活動法人としての認証を受けました。ここにあらためて、精度高く、適切にCTによる肺がん検診を実施していく人材につき、肺がんCT検診認定医師、肺がんCT検診認定技師として認定させていただく業務を開始いたします。そして、近い将来には設備・スタッフを含む総合的な施設評価もさせていただくべく検討を開始いたします。

治癒可能な肺がんを早期に見出すことは広く国民の利益に資することになります。この認定機構は医師、技師への専門性の認定だけでなく、この肺がんCT検診を国民の方々に理解していただき、受診の端緒になるよう努めて参りたいと思います。

関連各位、そして一般国民の方々には多方面からのご支援、ご協力を賜りたくよろしくお願い申し上げます。

2009年4月
NPO法人肺がんCT検診認定機構
代表理事 長尾 啓一

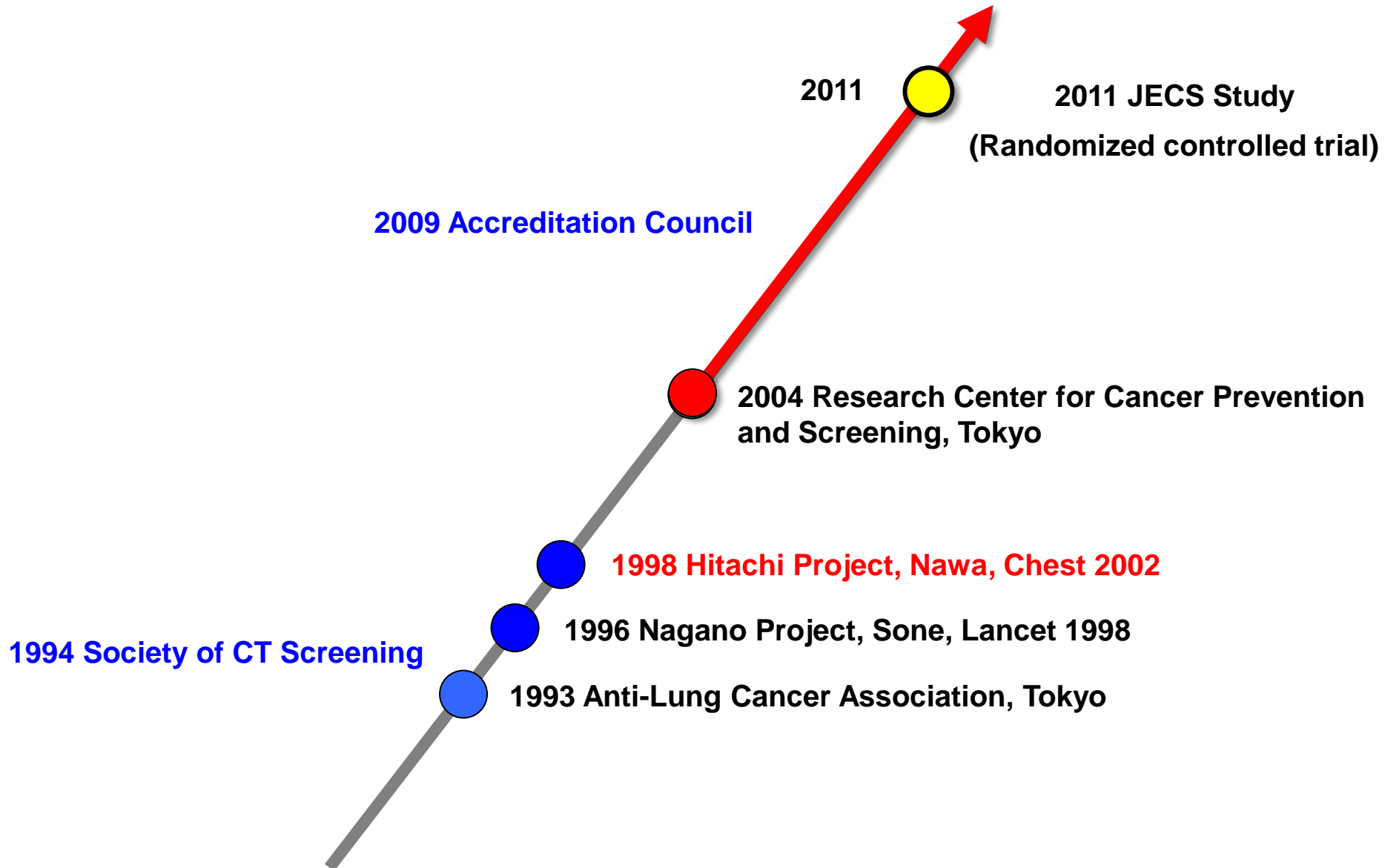
Copyright(C) 肺がんCT検診認定機構 All rights reserved.

- Accuracy Control

- Board-certified Doctors
Board-certified
Technologists

- In the near future,
facilities will also be certified

CT Lung Cancer Screening in Japan



A decrease in lung cancer mortality was seen following the introduction of low-dose chest CT screening in Hitachi, Japan

Nawa T, et al. Lung Cancer 2012



日立の樹
ONLINE

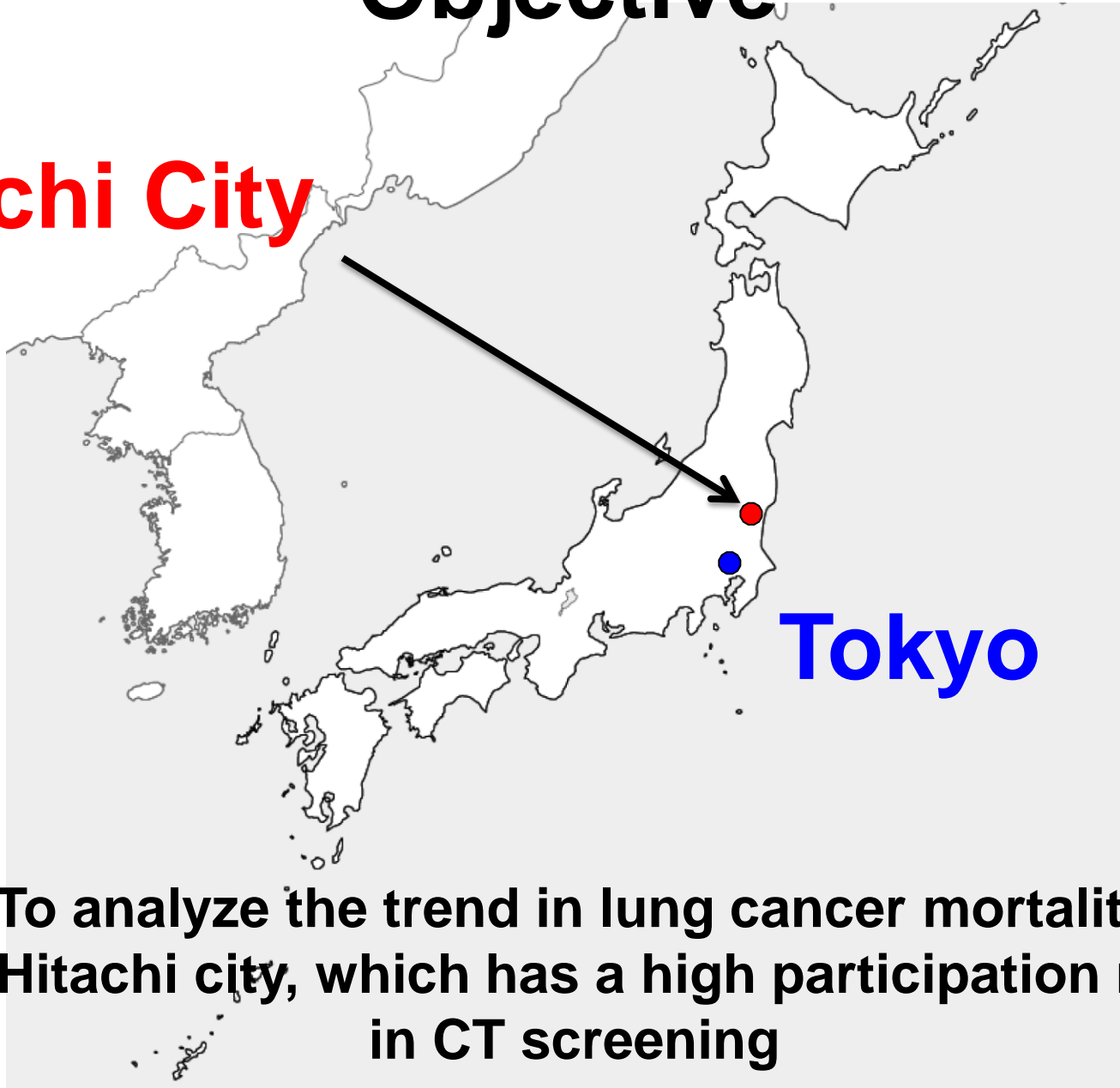
<http://www.hitachinoki.net/>

Copyright © 2012, Hitachi, Ltd.

Provided by Dr. Takeshi Nawa

Objective

Hitachi City



**To analyze the trend in lung cancer mortality
in Hitachi city, which has a high participation rate
in CT screening**

Numbers of Participants

According to Gender and Number of Smokers

(Between 1998 and 2009)

- **Number of participants: 31,739**
 - Men, 18,273**
 - Women, 13,466**
- **Hitachi Health Care Center (1998-)**
- **Hitachi Medical Center (2001-)**
- **40% of the population of Hitachi city (47% of men, 33% of women) screened using CT at least once as of 2009**

Numbers of Participants

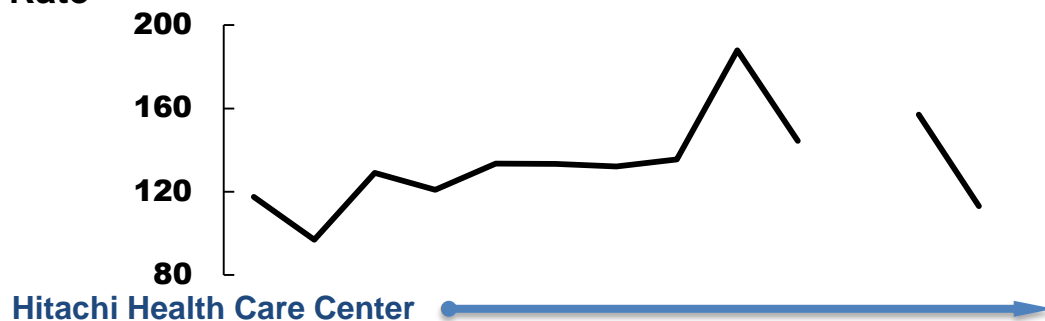
According to Gender and Number of Smokers

(Between 1998 and 2009)

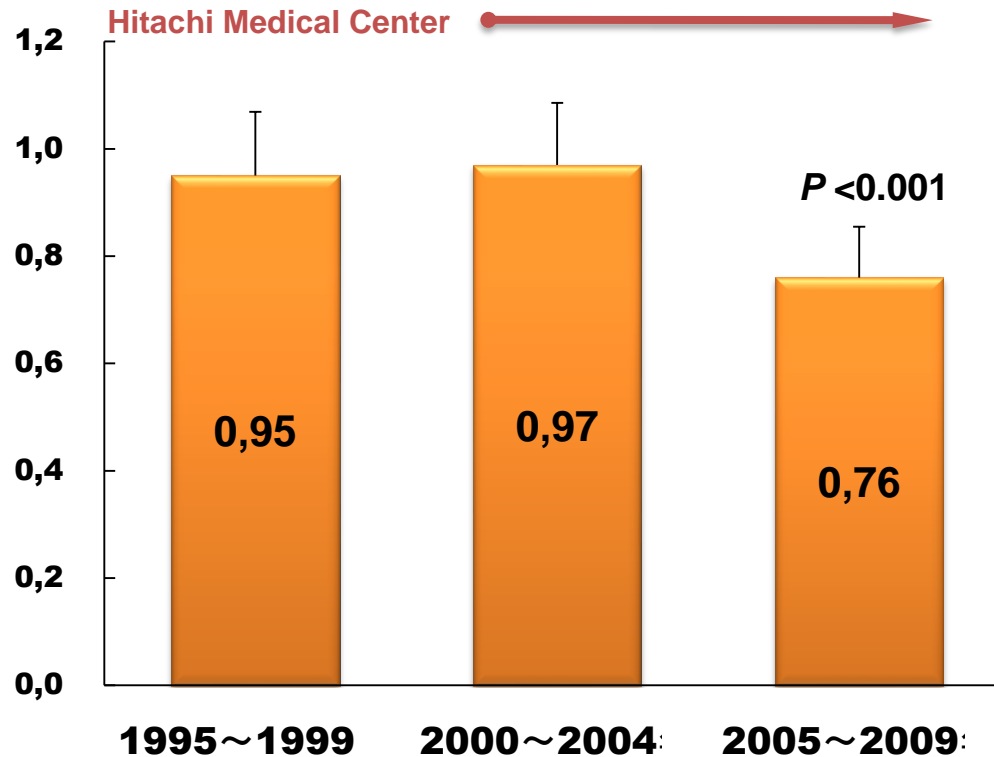
- **Number of participants: 31,739 (smokers, 14,661 [46%])**
 - Men, 18,273 (smokers, 13,456 [74%])**
 - Women, 13,466 (smokers, 1,115 [8%])**
- **Hitachi Health Care Center (1998-)**
- **Hitachi Medical Center (2001-)**
- **40% of the population of Hitachi city (47% of men, 33% of women) screened using CT at least once as of 2009**

Time Trend of Standardized Mortality Ratio and Standardized Incidence Rate

Standardized Incidence Rate
per 100,000



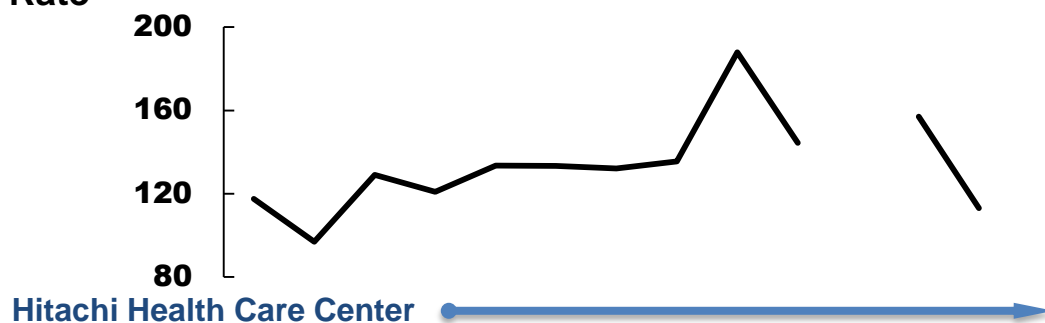
Standardized Mortality Ratio



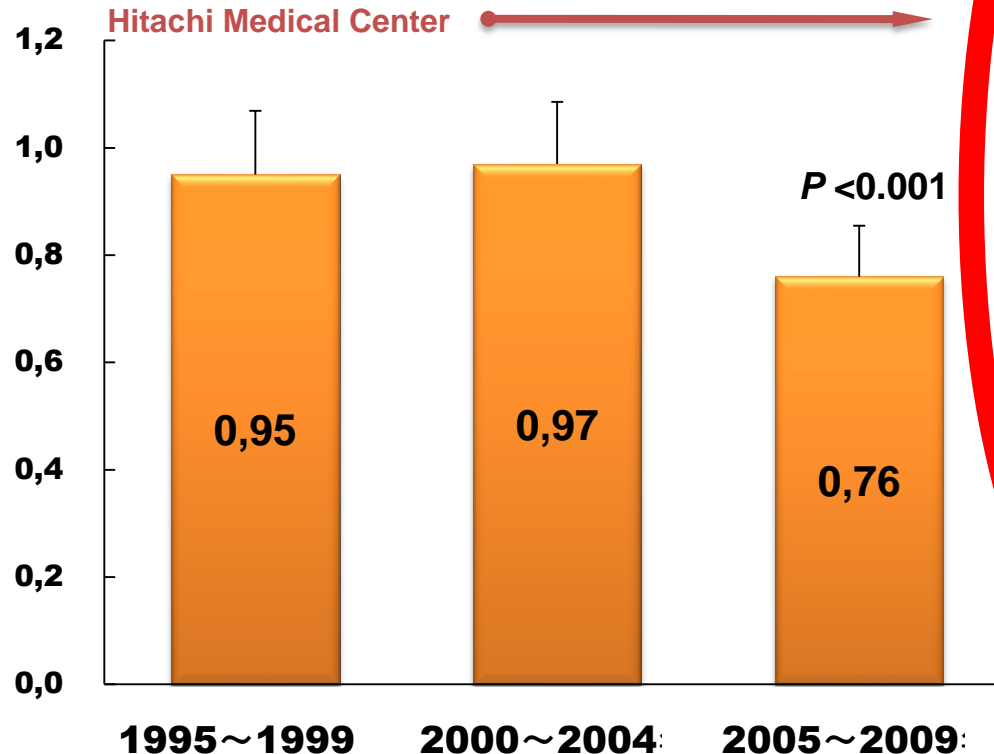
Provided by Dr. Takeshi Nawa

Time Trend of Standardized Mortality Ratio and Standardized Incidence Rate

Standardized Incidence Rate
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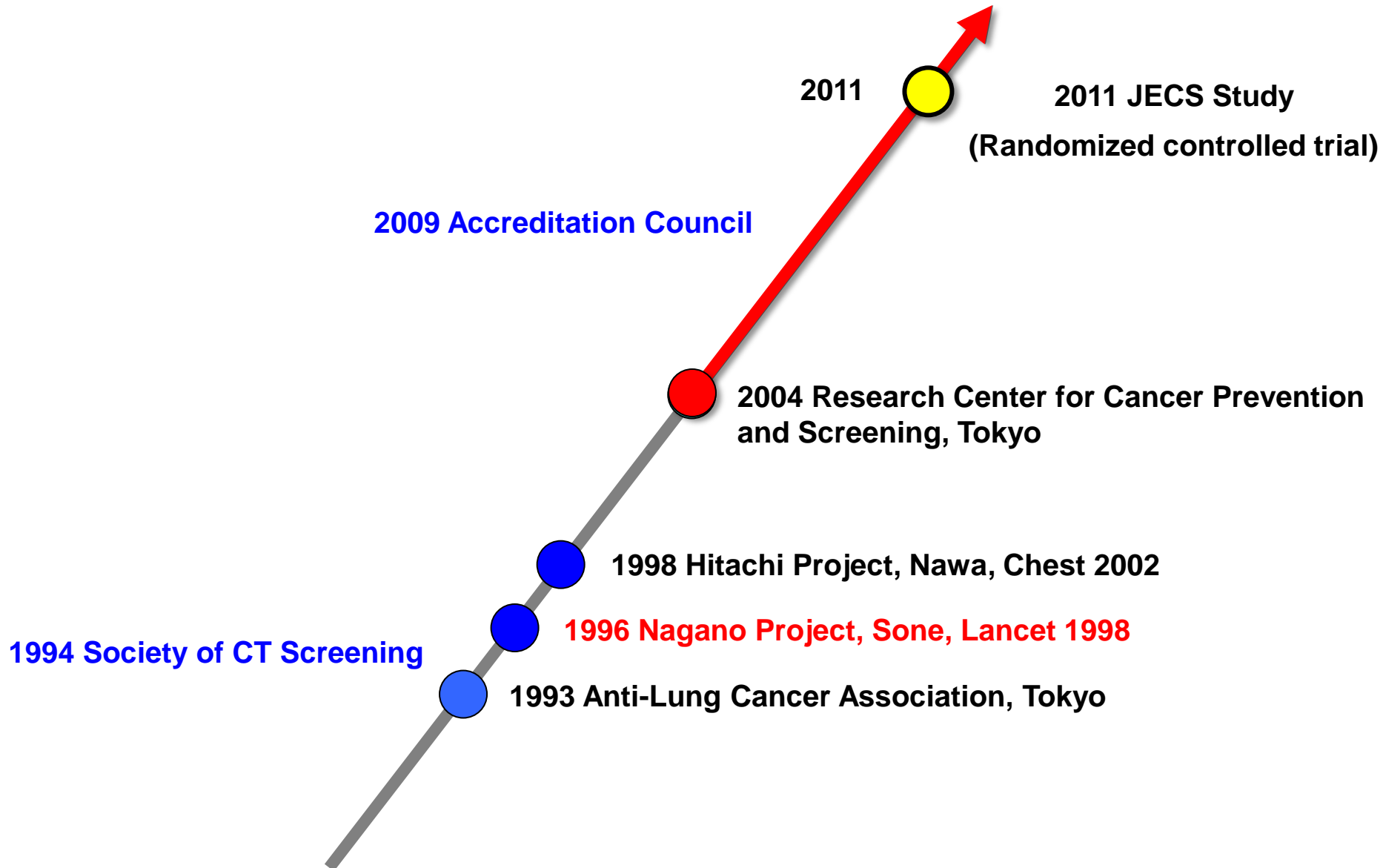


Standardized Mortality Ratio



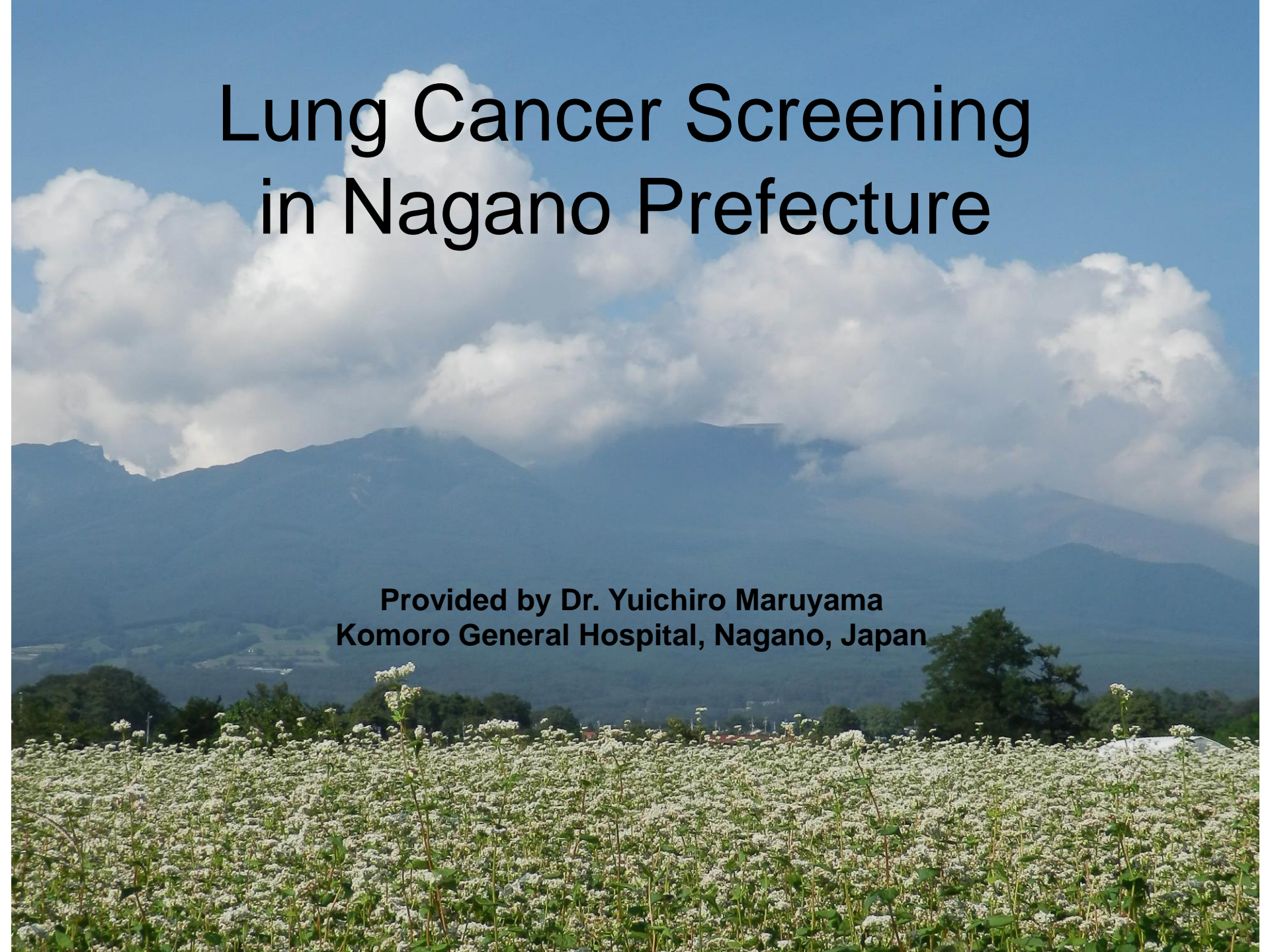
2010-2013

CT Lung Cancer Screening in Japan



Lung Cancer Screening in Nagano Prefecture

**Provided by Dr. Yuichiro Maruyama
Komoro General Hospital, Nagano, Japan**



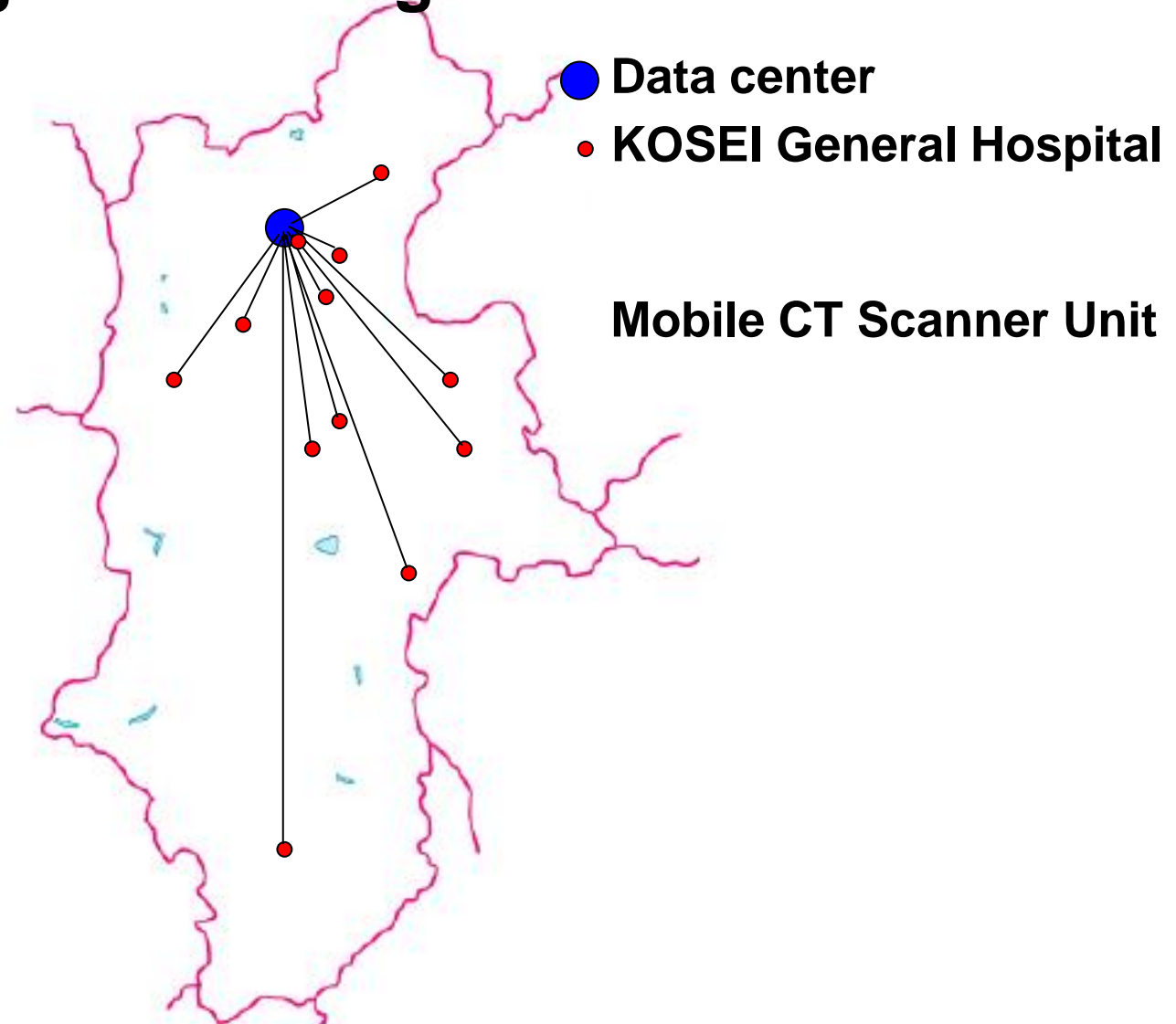
Population-based Lung Cancer Screening in Nagano Prefecture

Nagano Prefecture



Tokyo

Dedicated Optical Fiber Network for CT Lung Cancer Screening by Japan Agriculture Nagano Medical Network



Provided by Dr. Yuichiro Maruyama

Mobile CT Unit in Nagano



Entrance

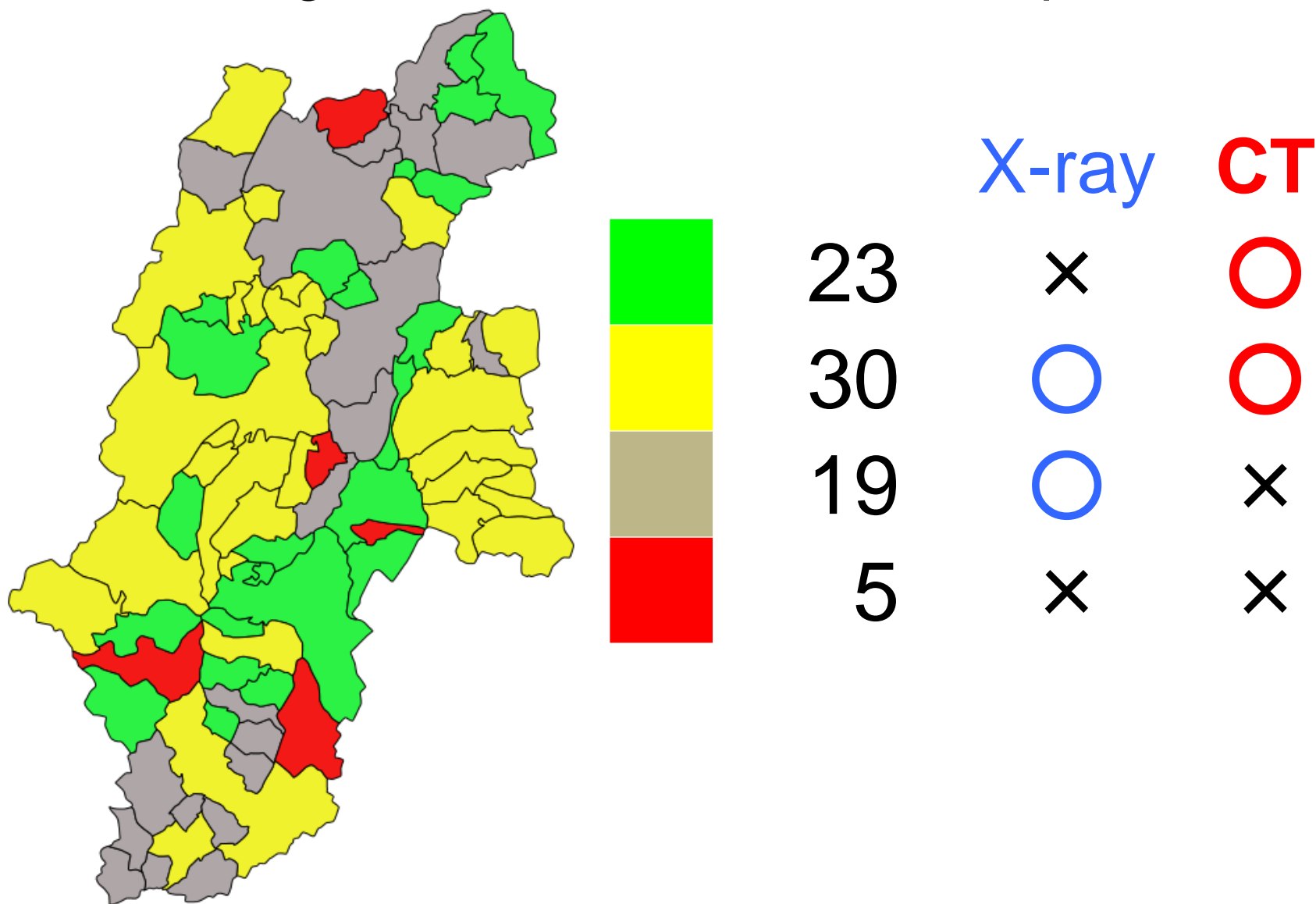


Console

**4-Multislice CT (Hitachi Ltd.), 10mA, 0.8s/rotation, 8mAs,
Reconstruction Interval 5mm**

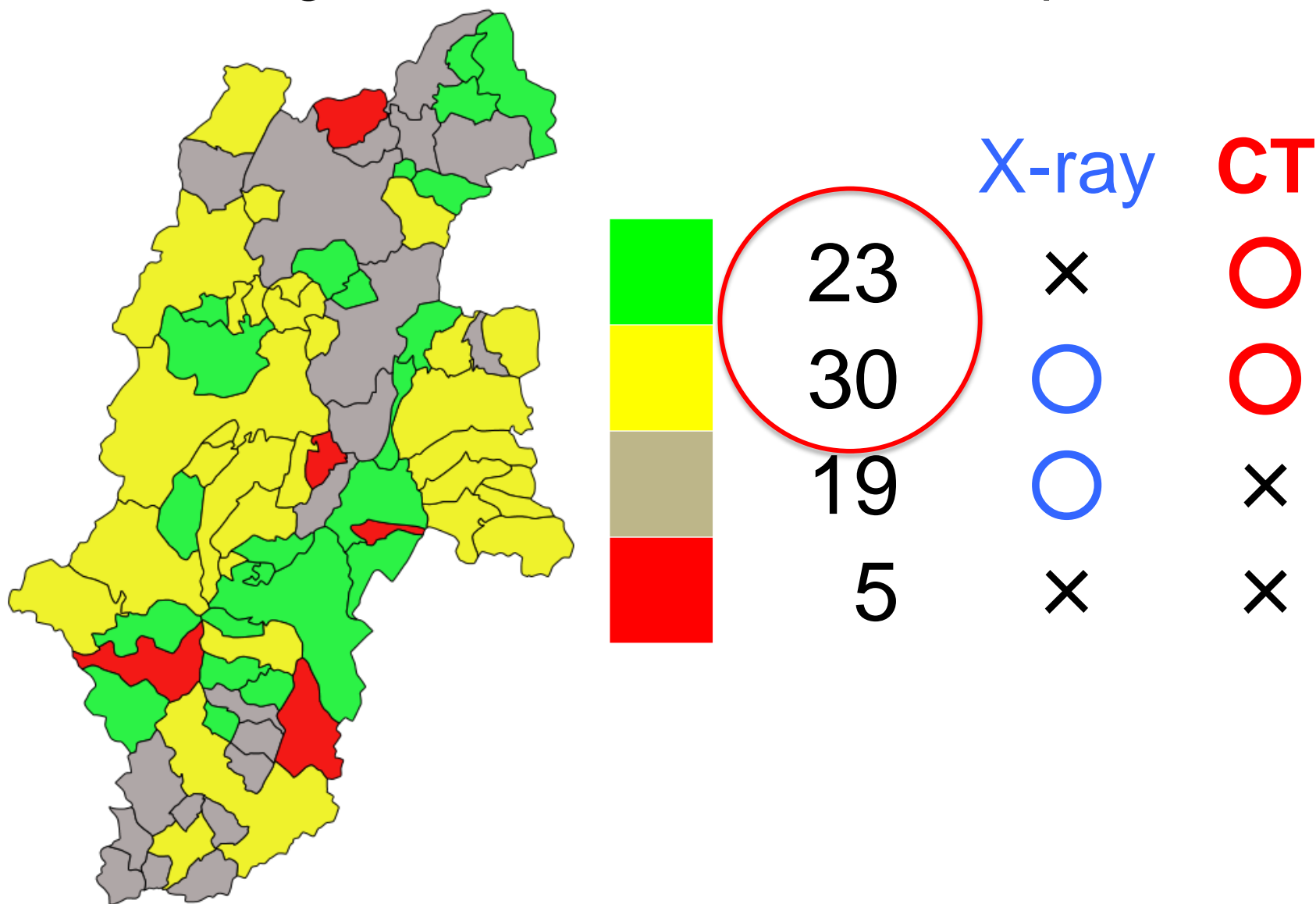
Provided by Dr. Yuichiro Maruyama

Implementation Status of Lung Cancer Screening in Nagano Prefecture's 77 Municipalities

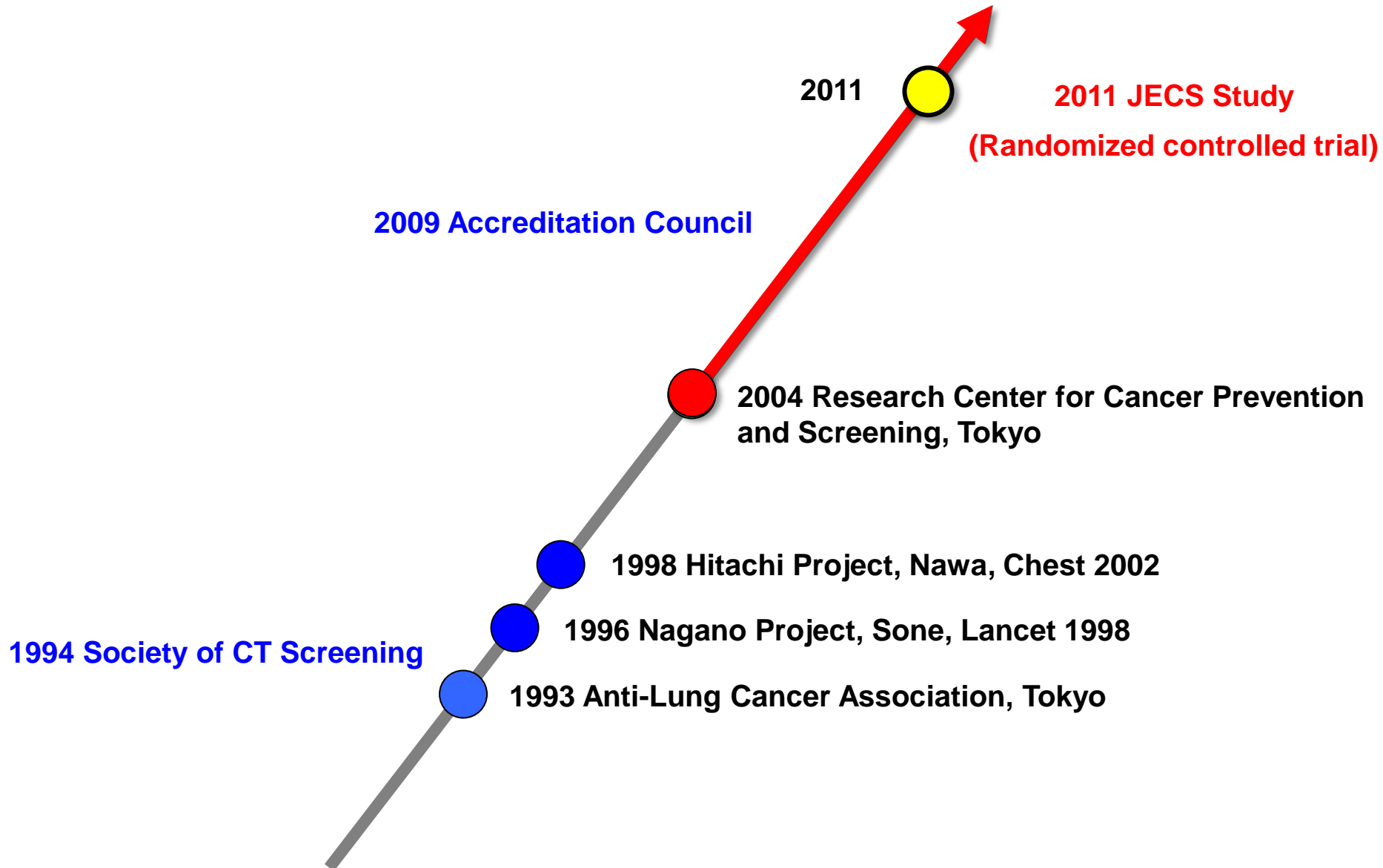


Provided by Dr. Yuichiro Maruyama

Implementation Status of Lung Cancer Screening in Nagano Prefecture's 77 Municipalities



CT Lung Cancer Screening in Japan



RCT to Evaluate the Efficacy of Low-dose CT Screening for Lung Cancer (Pack-years <30)

RCT to Evaluate the Efficacy of Low-dose CT Screening for Lung Cancer (Pack-years <30)

**50-64 years old
35,000 participants**

RCT to Evaluate the Efficacy of Low-dose CT Screening for Lung Cancer (Pack-years <30)

**Assuming 60%
mortality reduction**

**50-64 years old
35,000 participants**

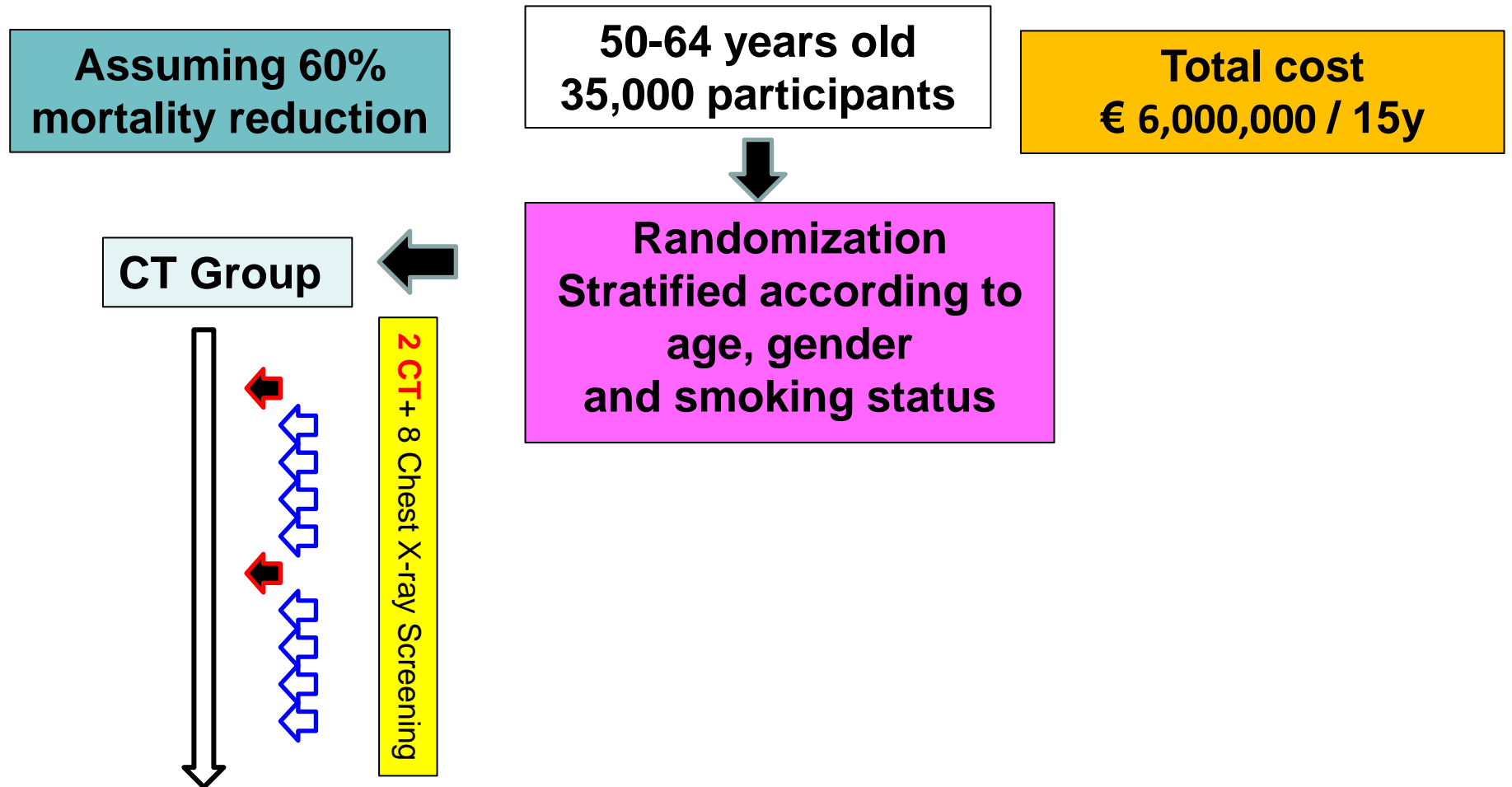
RCT to Evaluate the Efficacy of Low-dose CT Screening for Lung Cancer (Pack-years <30)

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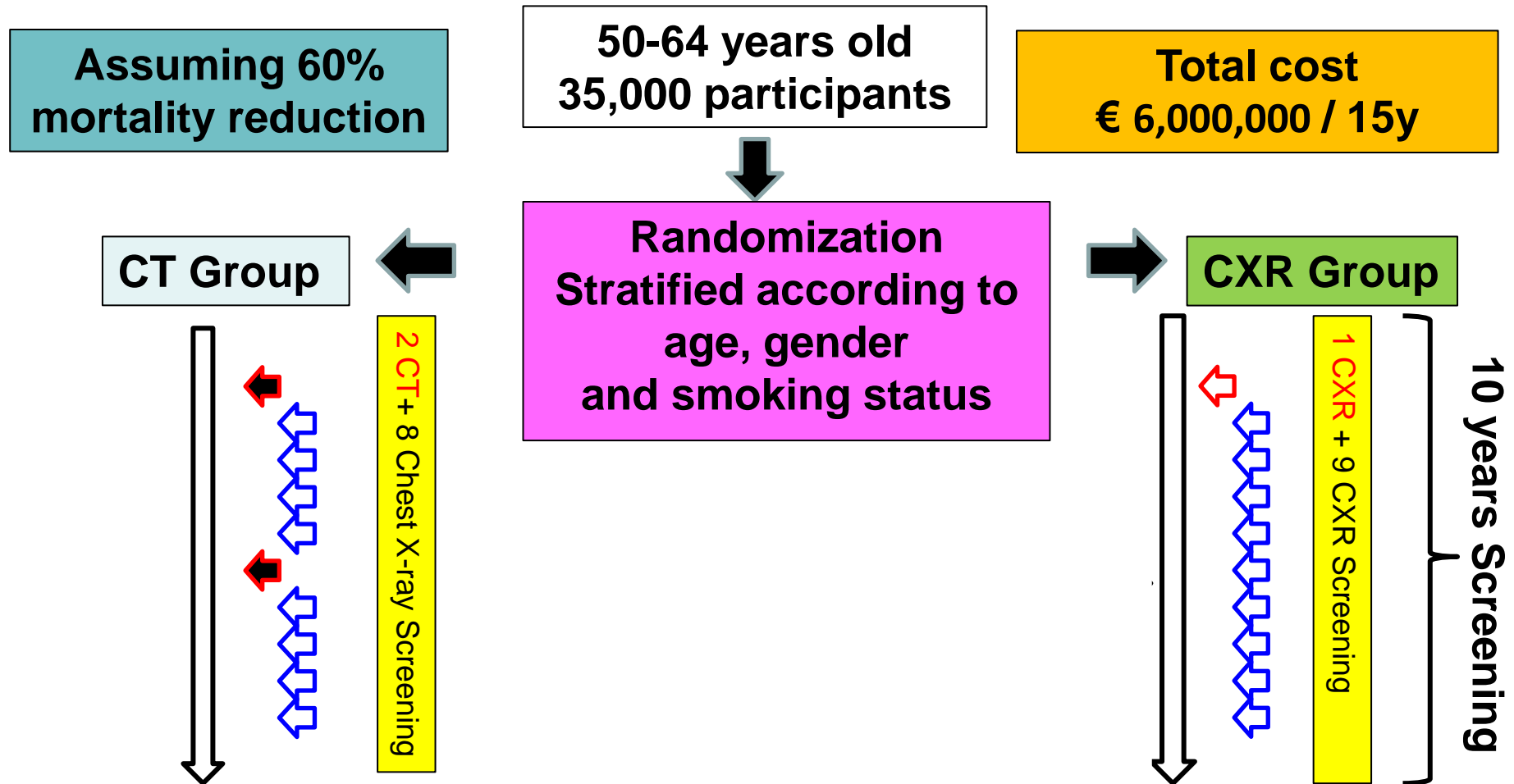
**50-64 years old
35,000 participants**

**Total cost
€ 6,000,000 / 15y**

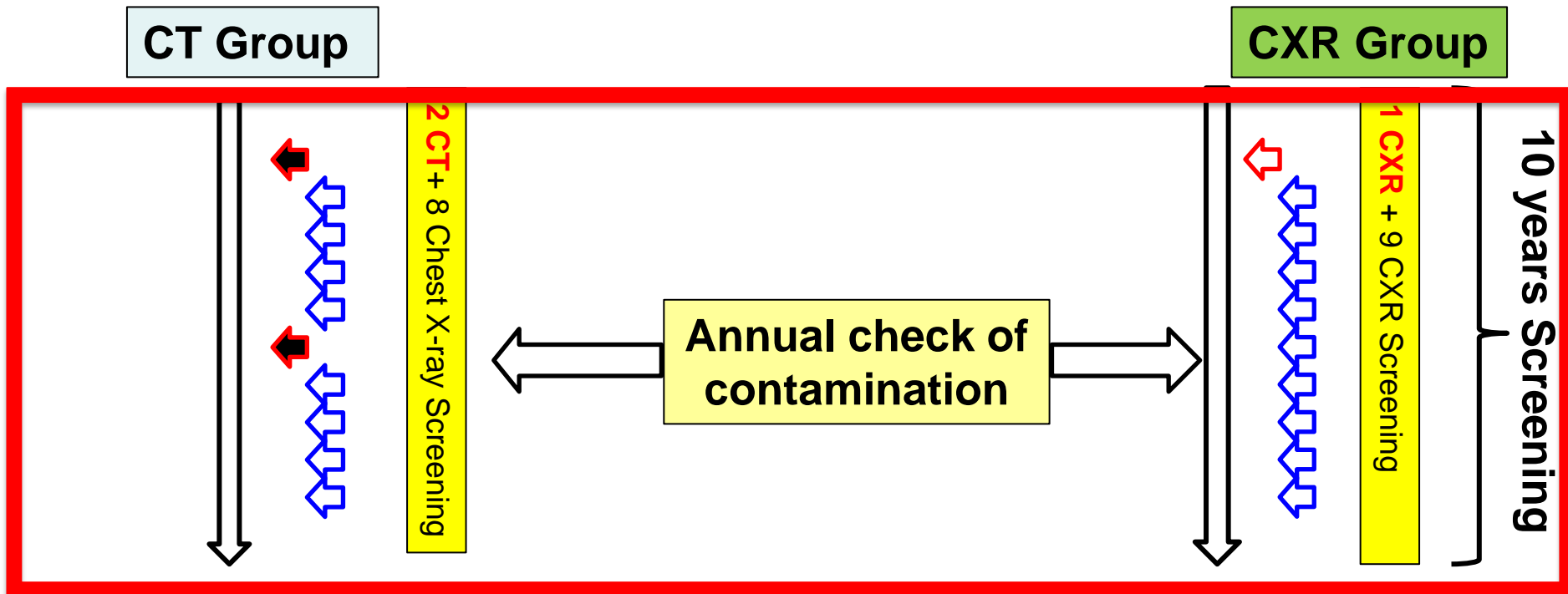
RCT to Evaluate the Efficacy of Low-dose CT Screening for Lung Cancer (Pack-years <30)



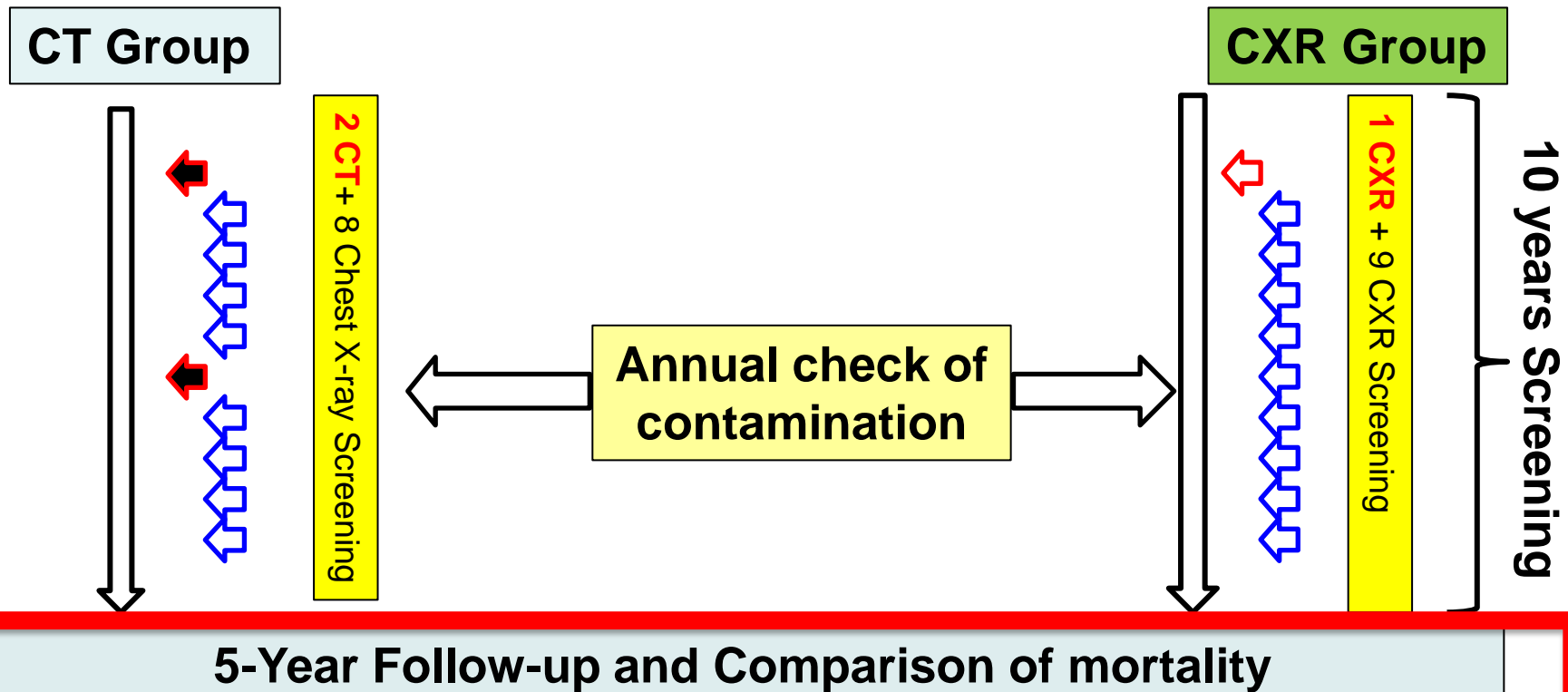
RCT to Evaluate the Efficacy of Low-dose CT Screening for Lung Cancer (Pack-years <30)



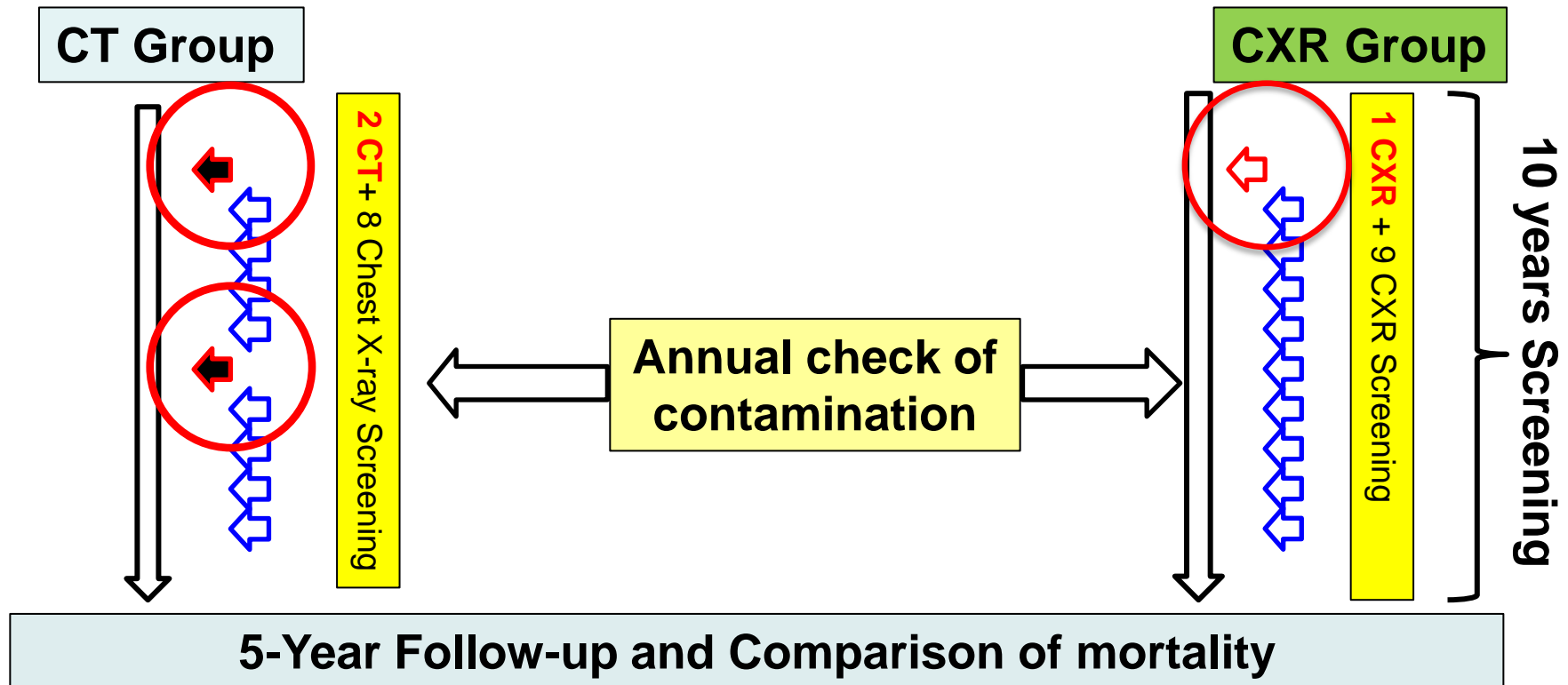
RCT to Evaluate the Efficacy of Low-dose CT Screening for Lung Cancer (Pack-years <30)



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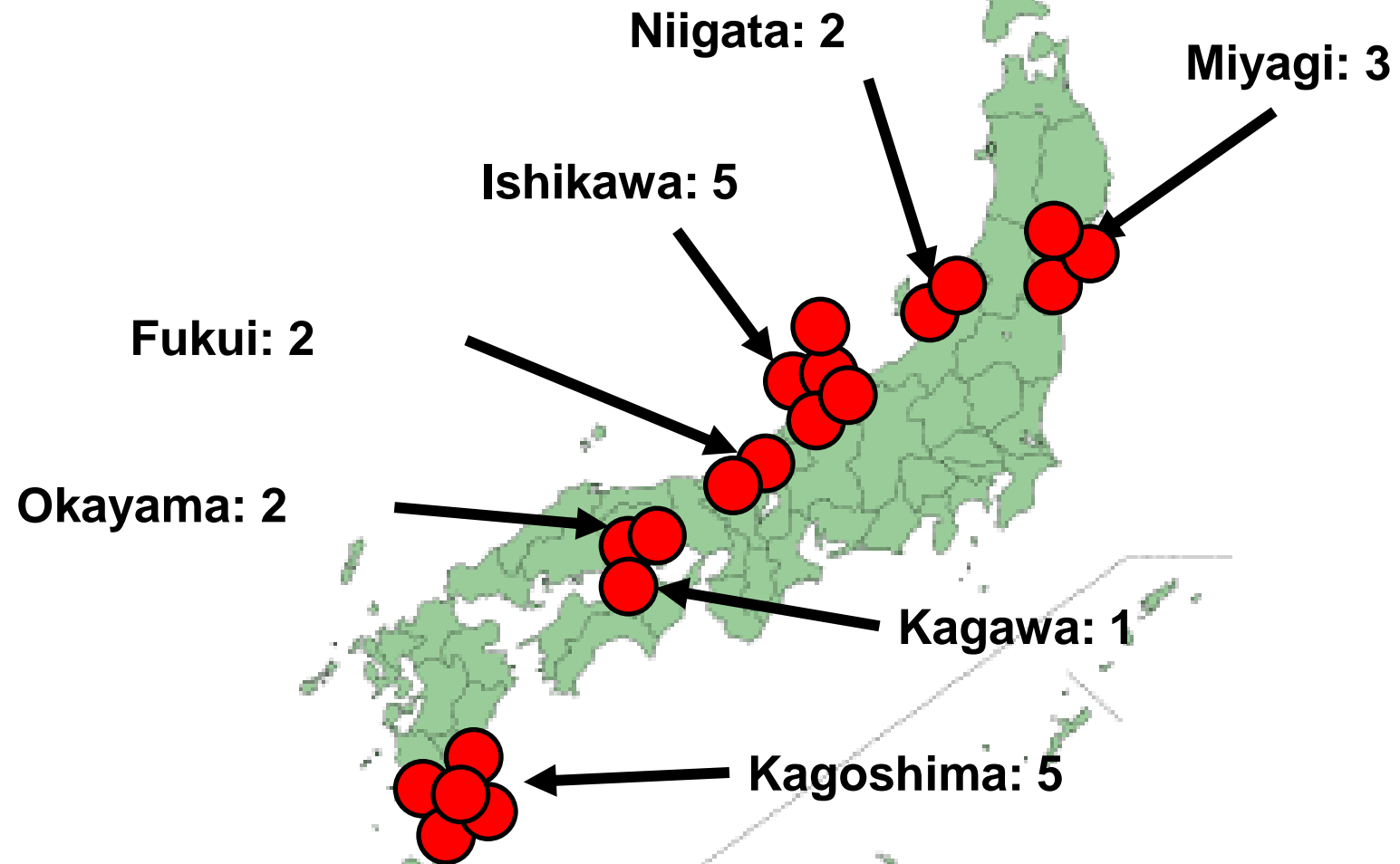


RCT to Evaluate the Efficacy of Low-dose CT Screening for Lung Cancer (Pack-years <30)



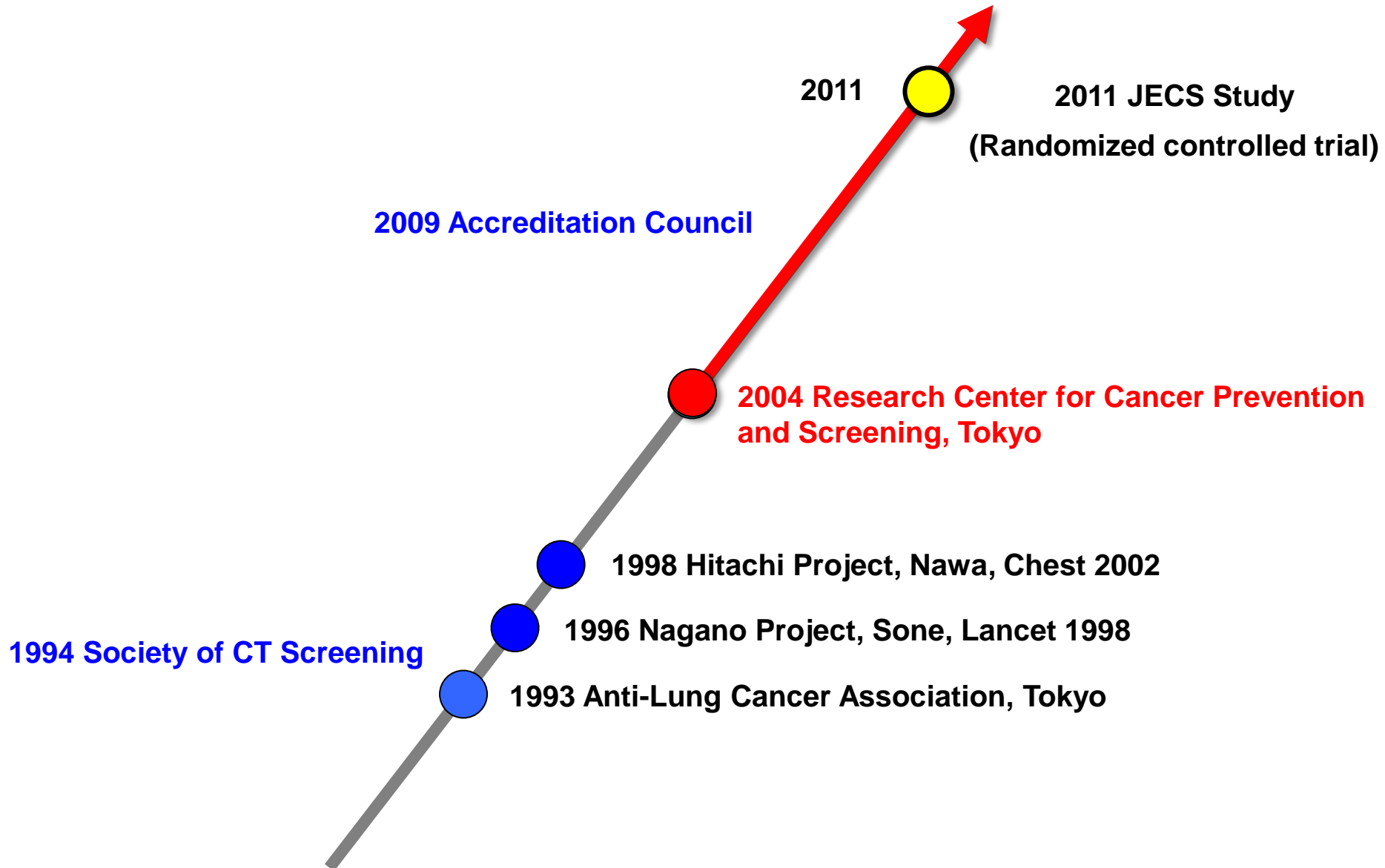
The Japanese Randomized Trial for Evaluating the Efficacy of Low-dose Thoracic CT Screening for Lung Cancer JECS Study in 20 Municipalities

● Municipality



Provided by Dr. Motoyasu Sagawa

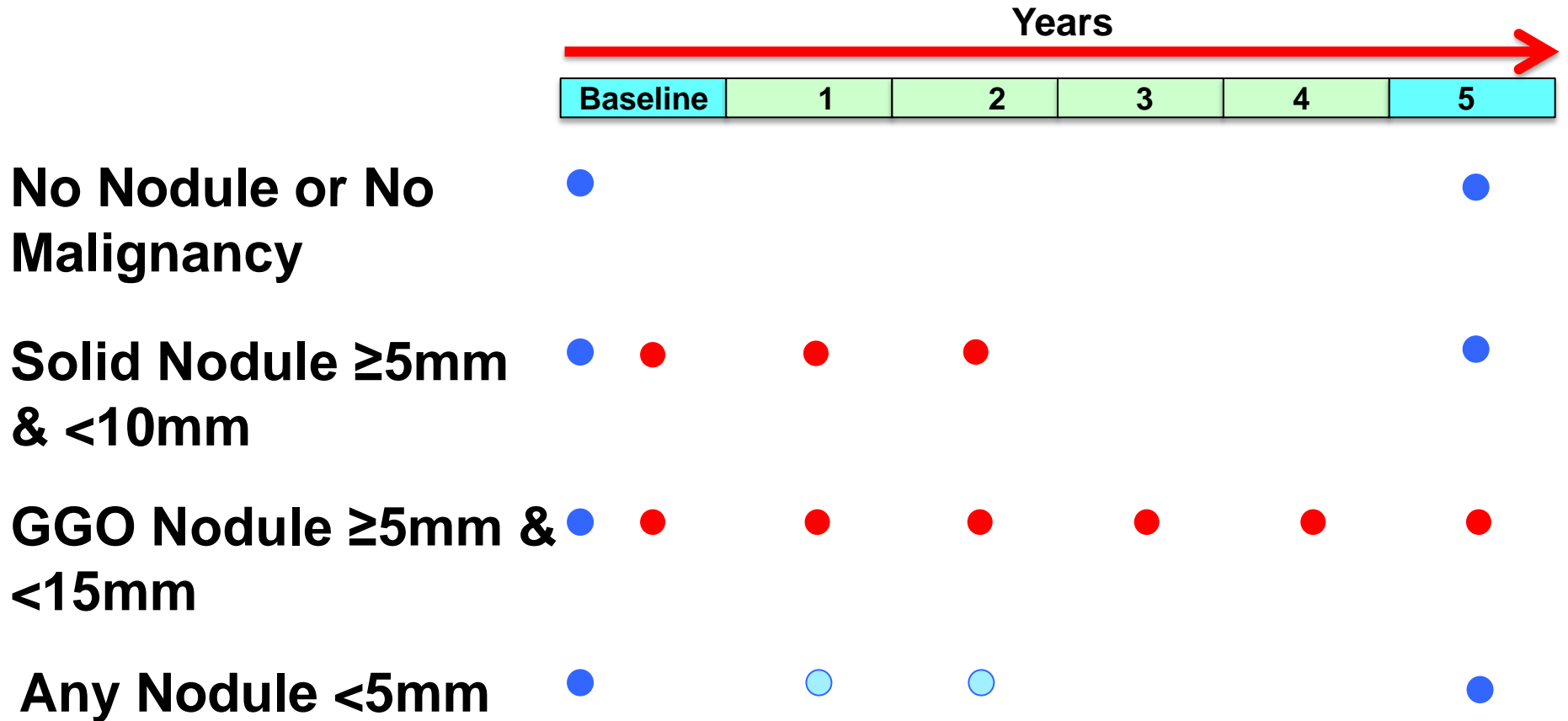
CT Lung Cancer Screening in Japan



Research Center for Cancer Prevention and Screening



Screening CT and Follow-Up CT Protocol In RCCPS



● Screening CT (€245 – Fee Paid by Individual)

○ Screening CT (€112 – Fee Paid by Individual)

● (€112 – 30% by Individual & 70% by National Health Insurance)

Optional Screening CT by Individual

Protocols of CT Scan

2012 Sep

2004Apr

2010Jun

AIDR 3D¶

16-row multidetector CT

64-row MDCT

Screening CT 15 mAs

Follow-Up Clinic (Size of Nodule ≥ 5 mm)

2011Nov

Total Lungs

Exposure Control (compatible with 15 mAs)

5-10 mAs

5 mAs

Nodule only

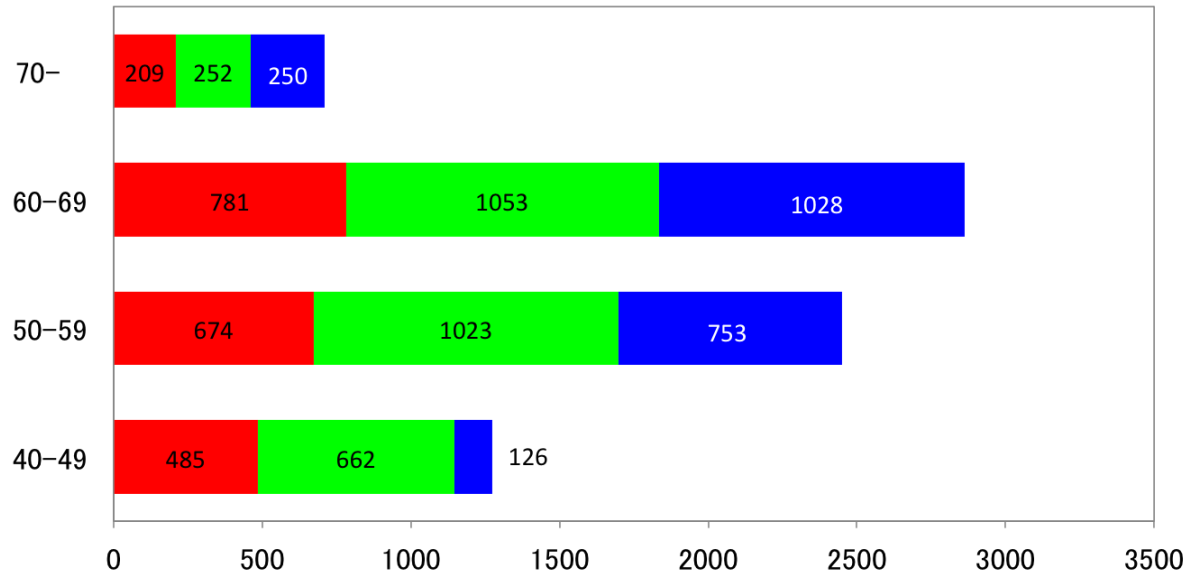
High-resolution CT 150 mAs (range of 4cm)

HRCT ≤ 100 mAs

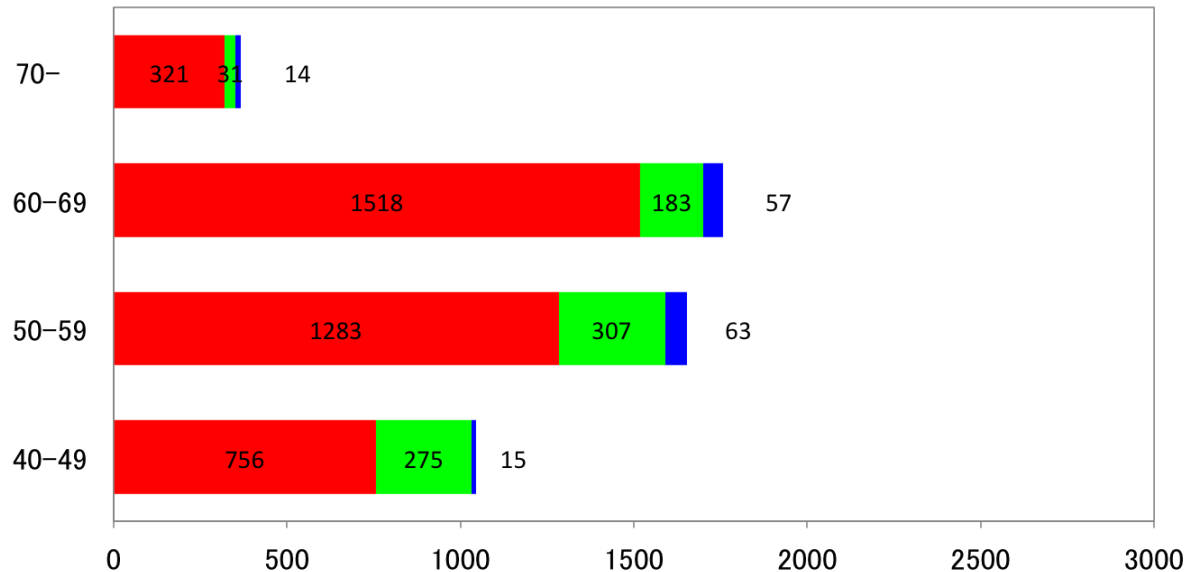
¶ Adaptive Iterative Dose Reduction 3D

Participants According to Gender, Ager and Smoking Status Between 2004 and March 2012 (N=12122)

Male
n=7,299



Female
n=4,823



■ **Never-smokers** ■ **Pack-years <30** ■ **Pack-years ≥30**

Lung Cancers According to Gender, Diameter, Histology and Smoking Status

		Never-Smoker	Pack-years <30	Pack-years ≥30	Total
Cases /Lesions §	Male	16/16	22/22	32/36	70/74
	Female	50/59	10/12	2/2	62/73
Maximal Diameter (cm)*		1.5 ± 0.7	1.4 ± 0.7	1.5 ± 0.6	1.5 ± 0.7
Histology	Adeno	73 (97%)	31 (91%)	28 (74%)	132
	Sq	0	0	8	8
	Small	0	1	2	3
	Adsq	0	1	0	1
	Carcinoid	2	0	0	2
	NSCLC	0	1	0	1

Lesions § : nodules + other lesions

Lung Cancers According to Gender, Diameter, Histology and Smoking Status

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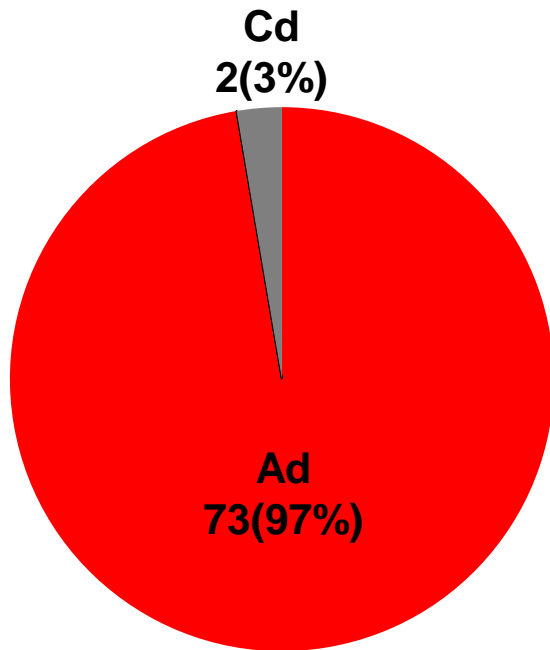
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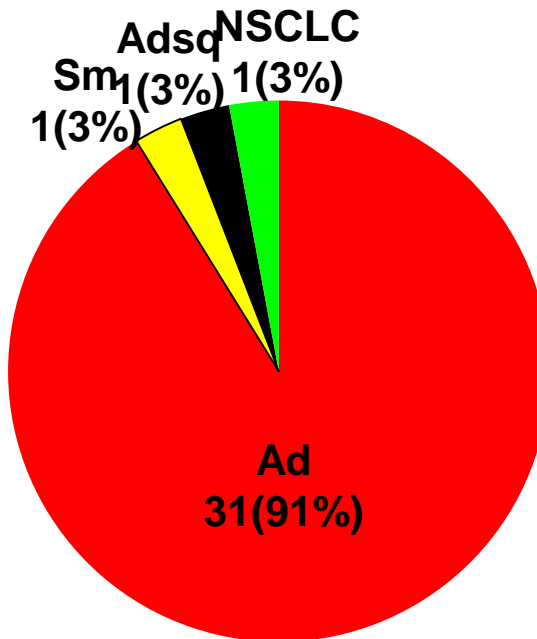
*Mean ± SD
Lesions § : nodules + other lesions

Lung Cancers According to Histology and Smoking Status

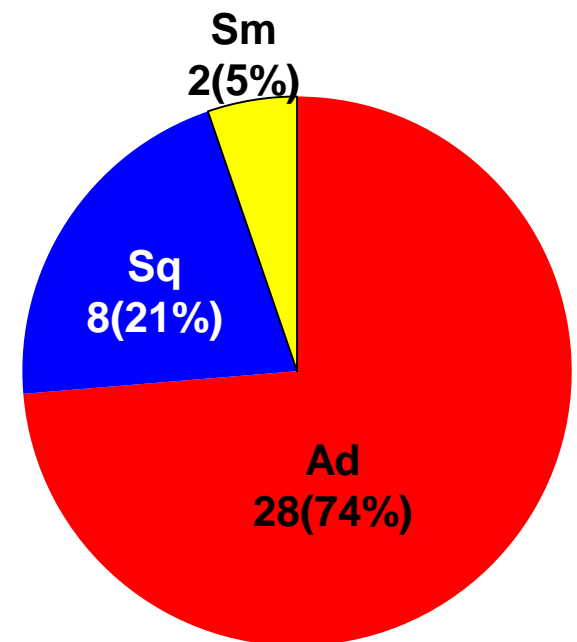
Never-smokers
n=75



Pack-years <30
n=34



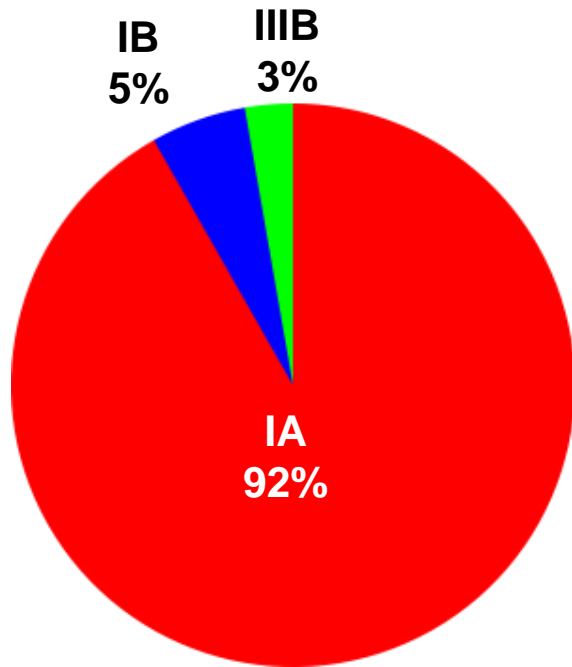
Pack-years ≥30
n=38



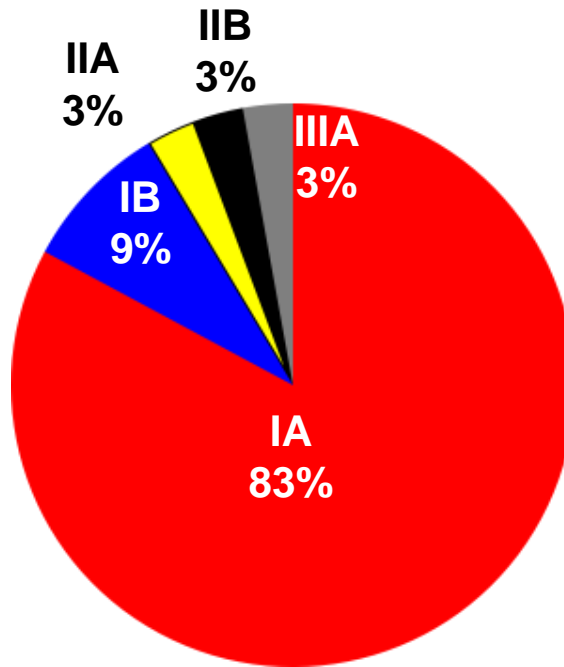
Ad Sq Sm Adsq Carcinoid NSCLC

Lung Cancers According to Stages and Smoking Status

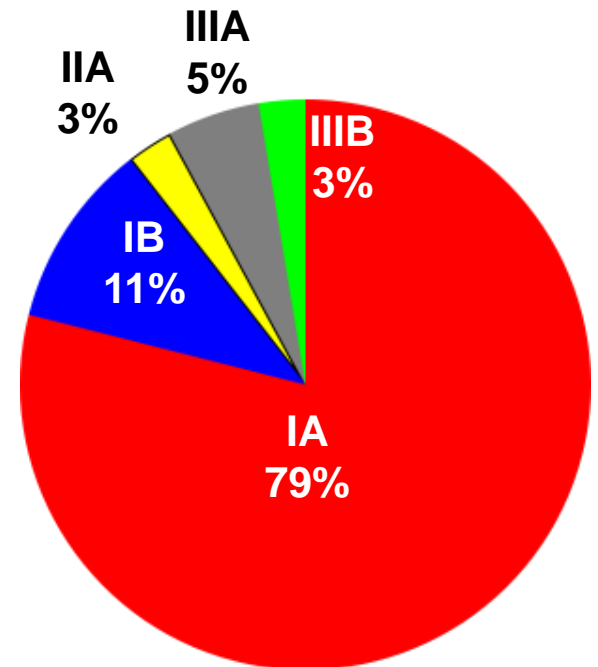
Never-smokers
n=75



Pack-years <30
n=34



Pack-years ≥30
n=38



Lung Cancer Cases According to Gender and Smoking Status

$P < 0.0001$

	Never- smokers	Smokers*	Total
Men	16	54	70
Women	50	12	62
Total	66	66	132

* Smokers: including ex-smokers

Lung Cancer Cases According to Gender and Smoking Status

$P < 0.0001$

	Never- smokers	Smokers*	Total
Men	16	54	70
Women	50	12	62
Total	66	66	132

* Smokers: including ex-smokers

Adenocarcinoma Cases According to Smoking Status and Histopathology

P = 0.274

	AIS+MIA	Invasive	Total
Never-smokers	42	23	65
Smokers*	29	24	53
Total	71	47	118

Smokers: including ex-smokers

AIS: adenocarcinoma in situ

MIA: minimally invasive adenocarcinoma

Invasive: invasive adenocarcinoma

Adenocarcinoma Cases According to Smoking Status and Histopathology

$P = 0.274$

	AIS+MIA	Invasive	Total
Never-smokers	42	23	65
Smokers*	29	24	53
Total	71	47	118

Smokers: including ex-smokers

AIS: adenocarcinoma in situ

MIA: minimally invasive adenocarcinoma

Invasive: invasive adenocarcinoma

Never-smoker Adenocarcinoma Cases According to Gender and Histopathology

P <0.05

	AIS+MIA	Invasive	Total
Men	7	9	16
Women	35	14	49
Total	42	23	65

Smokers: including ex-smokers

AIS: adenocarcinoma in situ

MIA: minimally invasive adenocarcinoma

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Never-smoker Adenocarcinoma Cases According to Gender and Histopathology

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**Solid Nodule
Mapping**

**Division of
Epidemiology and
Prevention**

**Nodule
Epidemiology**

Outpatient Clinic

**Natural History of
Subsolid Nodules**

Lung Nodule Database

**Solid Nodule
Follow-up System**

**Research Center
Division of Genome
Biology**

**SNP of Participants with
Subsolid Nodules**