

Overview of Lung Cancer Screening

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■ Cancer control

- Prevention, Screening, Treatment, Palliation

■ 上醫醫未病之病，中醫醫欲病之病，下醫醫已病之病。

——《備急千金要方》，孫思邈（唐）

5-year survival

ALL	(2004-2006) TCDB	(1998-2004) NCDB
I	55.4%	42.7%
II	31.6%	24.4%
III	9.7%	10.0%
IV	4.3%	2.1%

12%**15%****Stage distribution**

ALL	(2004-2006) TCDB	(2004-2006) NCDB
I	9.5%	20.6%
II	3.3%	6.2%
III	25.8%	24.1%
IV	52.4%	37.0%
UK	9.1%	11.9%

Principles of Cancer Screening

- The target disease should be a common form of cancer, with high associated morbidity or mortality.
- Effective treatment, capable of reducing morbidity and mortality, should be available.
- Test procedures should be acceptable, safe, and relatively inexpensive.

Randomized controlled trials with CXR and sputum cytology (1970s)

Study	Study arm	No.	No. cancer detected		Mortality (per 1000 person-year)
			Prevalence	Incidence	
John Hopkins Lung Project, 1973 ²⁰	All	10 386			
	Experimental	5 336	39	194	3.4
	Control	5 161	40	202	3.8
Memorial Sloan-Kettering Lung Project, 1974 ²¹	All	10 040			
	Experimental	5 072	30	114	2.7
	Control	4 968	23	121	2.7
Mayo Lung Project, 1971 ²²	All	10 933	91 [†]		
	Experimental	4 618	—	206	3.2
	Control	4 593	—	160	3.0
Czechoslovakia, 1975 ²³	All	6 364	18 [†]		
	Experimental	3 172	—	36 [‡]	1.7
	Control	3 174	—	19 [‡]	1.5
	Experimental	3 172	—	108 [§]	3.6
	Control	3 174	—	82 [§]	2.6

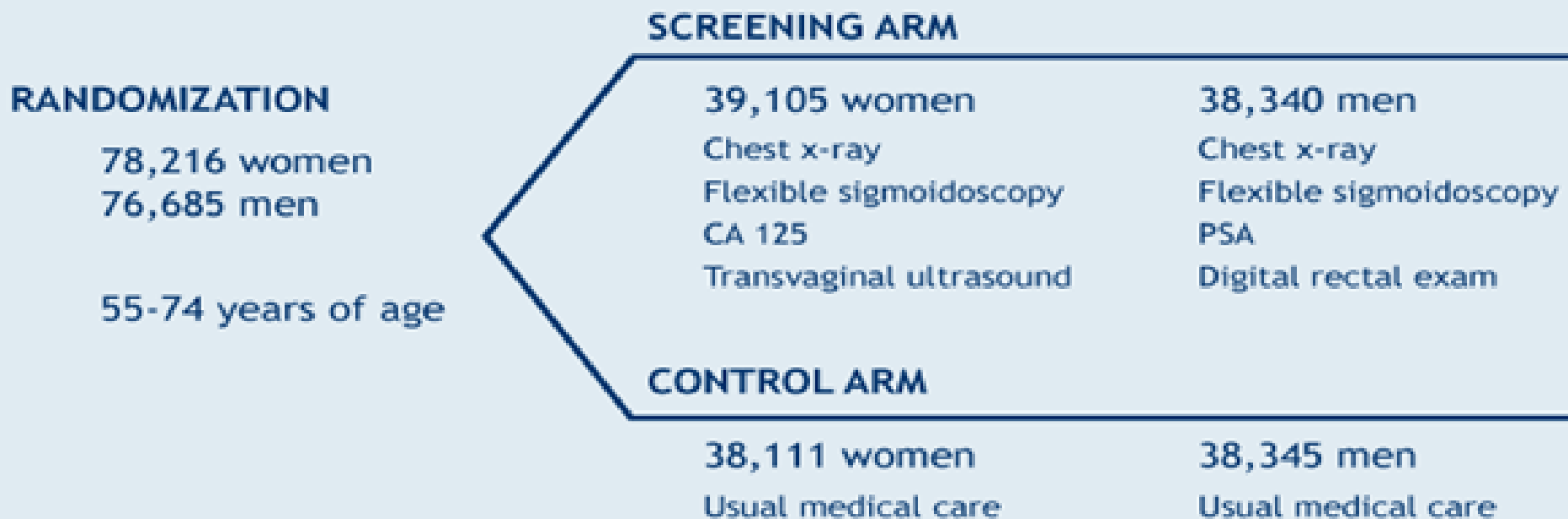
[†]Number from baseline prevalence screening.

[‡]First 3 years of screening.

[§]Entire 6 years of screening.

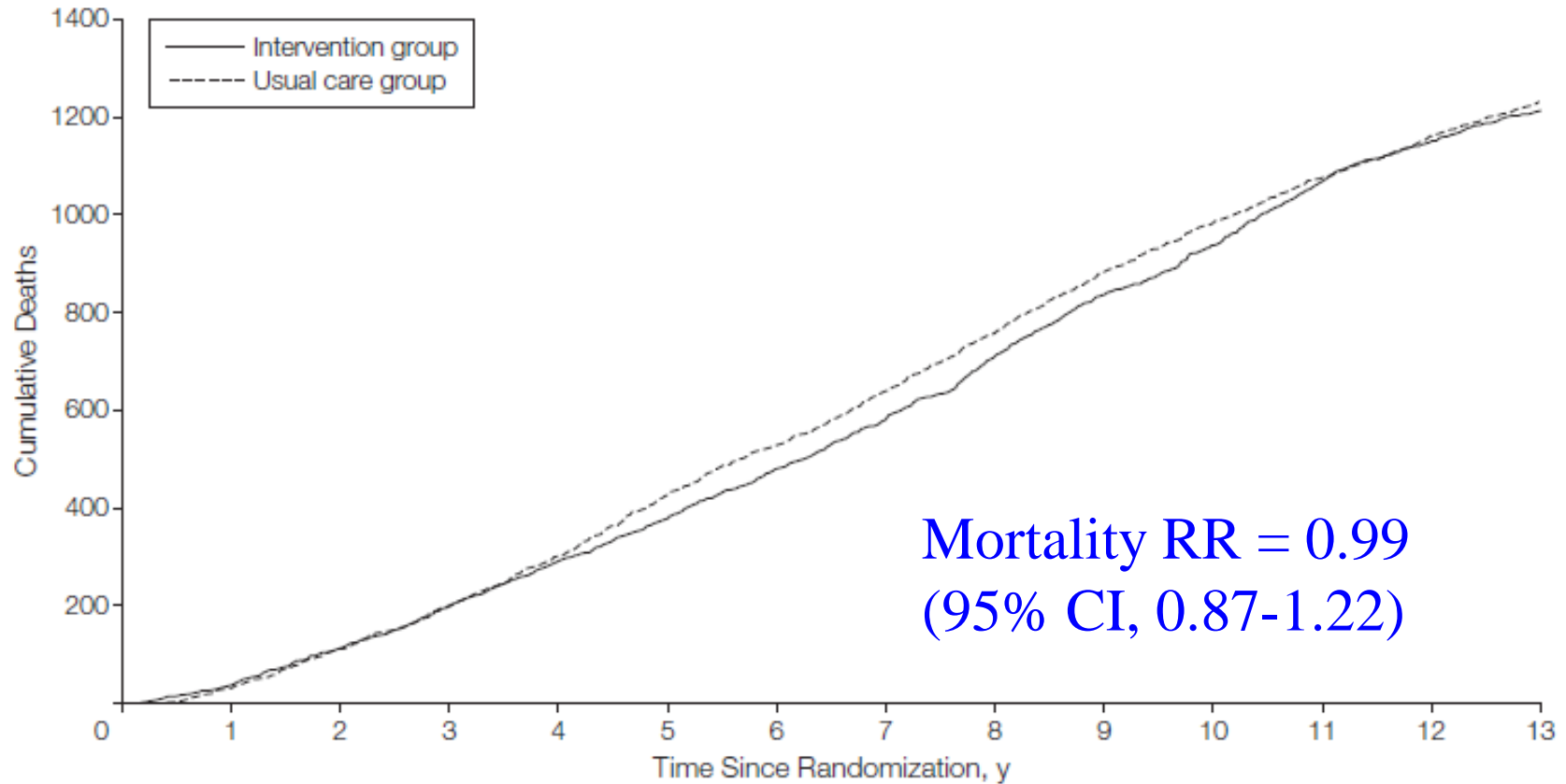
PLCO project: a population-based RCT, screening for Prostate, Lung, Colon, Ovary ca

Schematic of the PLCO Trial Design



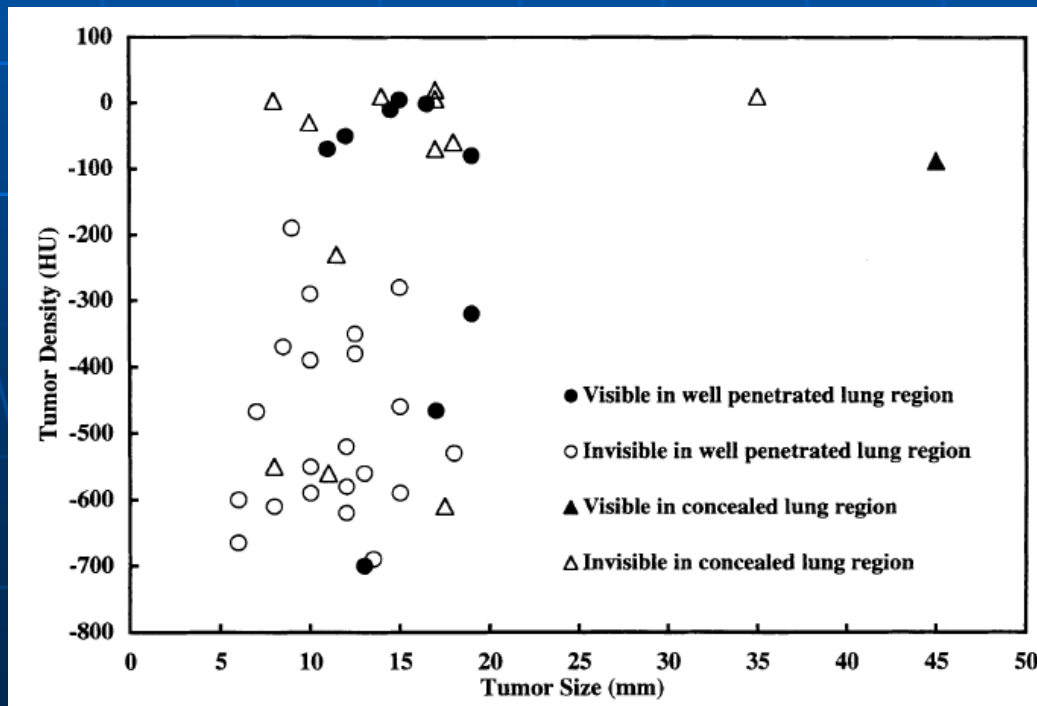
PLCO project - Lung

Lung Cancer Mortality by Year



Drawback of CXR in Lung Cancer Screening

- Concealed area
 - ~26% of lung volume is overlooked by CXR PA-view
- Contrast capability
 - Low density nodules are easily overlooked



Potential Tools for Lung Cancer Screening

- Imaging
 - Low-dose CT
 - Computer-aided detection (CAD) system
- Sputum cytology
 - Computer-assisted image cytometry
- Bronchoscopy
 - Autofluorescent bronchoscopy
- Biomarker
 - Sputum, blood, exhaled breath

Recommendations for LDCT

- NCCN -- November 17, 2011 -- the first to be published by a national advisory
- Guideline issued on JAMA (May 20, 2012) by ACCP and ASCO and was endorsed by ATS.
- AATS -- July, 2012 (JTCVS)
- ACS -- January 10, 2013 (CA Cancer J Clin)
- USPSTF -- July 30, 2013 (Ann Intern Med)
- The American College of Radiology (planned on Spring 2014)

US Preventive Services Task Force

- The USPSTF recommends annual screening for lung cancer with LDCT in persons at high risk for lung cancer based on age and smoking history.
 - Grade B recommendation.
 - The USPSTF recommends the service. There is high certainty that the net benefit is moderate or there is moderate certainty that the net benefit is moderate to substantial.

US Preventive Services Task Force

- Cervical ca: Pap smear cytology screening in women aged 21 to 65 years every 3 years
 - Grade: A Recommendation.
- CRC: Fecal OB testing, sigmoidoscopy, or colonoscopy, in adults aged 50 to 75 years.
 - Grade: A Recommendation.
- Breast ca: biennial screening mammography for women aged 50 to 74 years.
 - Grade: B recommendation.

美專家籲HIV篩檢例行化

2013-4-30 22:02 作者：中央社



成為你朋友中第一個說這謔的人。

加入書籤：  

【中央社芝加哥電】美國預防醫學小組（USPSTF）呼籲，所有15至65歲的美國人，無論是否是否具高風險，都應接受愛滋病毒（HIV）篩檢。這項變革或許有助減少和HIV篩檢有關的歧視。

具影響力的美國預防醫學小組提出這項新指南，和美國疾病管制暨預防中心（CDC）的長期建議一致，亦即所有15至65歲的美國人，無論風險高低，都應接受篩檢。

這個由政府資助、醫生和科學家組成的小組早在2005年便公布指南，建議高風險個人應接受HIV篩檢。

專家表示，29日刊登在《內科醫學年鑑》（Annals of Internal Medicine）的這項變革，可能會促使保險公司依據《可負擔健保法案》（Affordable Care Act）提供篩檢給付。根據總統歐巴馬的健保法，只要是預防醫學小組建議的預防篩檢，保險公司就必須給付。

USPSTF同時建議，未滿15歲或65歲以上族群，若感染風險提高也應該接受篩檢。USPSTF也說，所有孕婦都應該接受篩檢。

USPSTF成員、史丹佛大學醫學系教授歐文斯（Douglas Owens）表示，在某年齡族群的所有成人接受篩檢，可能有助減少任何和篩檢有關的歧視，並且能鼓勵民眾接受檢查。

專家根據有關HIV篩檢與治療好處與風險的證據，提出這項建議。最近研究顯示，接受HIV治療，能降低將病毒傳染給未感染者的風險多達96%。

RISK ASSESSMENT^{a,b}

- Smoking history^c
 - ▶ Present or past
- Radon exposure^d
- Occupational exposure^e
- Cancer history^f
- Family history of lung cancer

RISK STATUS

High risk:

- Age 55-74 y and
- ≥30 pack year history of smoking and
- Smoking cessation <15 y (category 1)
- or
- Age ≥50 y and
- ≥20 pack year history of smoking and
- One additional risk factor (other than second-hand smoke) (category 2B)

→ [See Screening and Findings \(LCS-2\)](#)

SCREENING OR SYMPTOM CATEGORY

SCREENING FOLLOW-UP

Increased Risk:

Prior history of breast cancer

→ [See NCCN Guidelines for Breast Cancer - Surveillance Section](#)

Women ≥35 y with 5-year risk of invasive breast cancer ≥1.7%^d

OR

LCIS (begin screening at diagnosis)

- Annual mammogram^h + clinical breast exam every 6-12 mo
- Breast awareness^g
- Consider risk reduction strategies ([See NCCN Guidelines for Breast Cancer Risk Reduction](#))

Women who have a lifetime risk >20% as defined by models that are largely dependent on family history^e

- Annual mammogram^h + clinical breast exam every 6-12 mo
 - ▶ beginning at age 30 y
- Breast awareness^g
- Consider risk reduction strategies ([See NCCN Guidelines for Breast Cancer Risk Reduction](#))
- Consider annual breast MRI
 - ▶ beginning at age 30 y

PLAN

- LDCT symposium
- Consensus within medical societies
TLCS, TSPCCM and RSROC
- HPA-sponsored national clinical trial (Health Promotion Administration)
- LDCT Registry (collaboration group)
 - Uniform questionnaire (Smoking Hx, Family hx, etc)
 - Link with TCDB



Smoking cessation counseling constitutes a high priority. Screening should not be viewed as an alternative to smoking cessation.

(ACS statement, 2013)

- 年齡介於55到74歲，曾經吸菸且吸菸史超過30包年，而且戒菸尚未超過15年的民眾，可以考慮使用低劑量電腦斷層以篩檢肺癌。然而，低劑量電腦斷層並不能預防肺癌，戒菸才是目前仍在吸菸者首先要作的事。
- 年齡介於55到74歲，曾經吸菸且吸菸史超過30包年，而且已經戒菸但戒菸尚未超過15年的民眾，是使用低劑量電腦斷層以篩檢肺癌的合適對象。低劑量電腦斷層並不能預防肺癌，戒菸才是目前仍在吸菸者首先要作的事。

Thanks for your attention