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)

| 5-1 | /Aar | CIII | viva | |
|--------|------------|------|------|--|
| J^-v | Gal | JUI | viva | |
| | | | | |

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

12% 15%

Stage distribution

| ALL | (200 |)4-2006) <i>(</i> | (2004-2006) |
|-------|------|-------------------|-------------|
| | | CDB | NCDB |
| 1 | | 9.5% | 20.6% |
| l)I | | 3.3% | 6.2% |
| -1)(1 | | 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)

| | | | No. cancer detected | | Mortality (per 1000 | |
|---|--------------|---------|---------------------|-----------------|---------------------|--|
| Study | Study arm | No. | Prevalence | Incidence | person-year) | |
| 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^{\dagger} | | | |
| | Experimental | 4618 | _ | 206 | 3.2 | |
| | Control | 4 593 | _ | 160 | 3.0 | |
| Czechoslovakia, 1975 ²³ | All | 6 3 6 4 | 18^{\dagger} | | | |
| | Experimental | 3 172 | _ | 36^{\ddagger} | 1.7 | |
| | Control | 3 174 | _ | 19 [‡] | 1.5 | |
| | Experimental | 3 172 | _ | 108^{\S} | 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

RANDOMIZATION

78,216 women 76,685 men

55-74 years of age

SCREENING ARM

39,105 women

Chest x-ray

Flexible sigmoidoscopy

CA 125

Transvaginal ultrasound

38,340 men

Chest x-ray

Flexible sigmoidoscopy

PSA.

Digital rectal exam

CONTROL ARM

38,111 women

Usual medical care

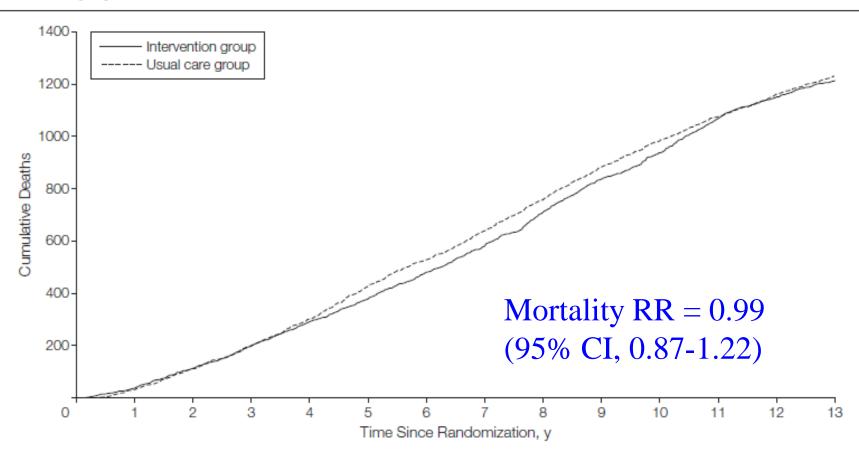
38,345 men

Usual medical care

NCI website; accessed on 2013.06

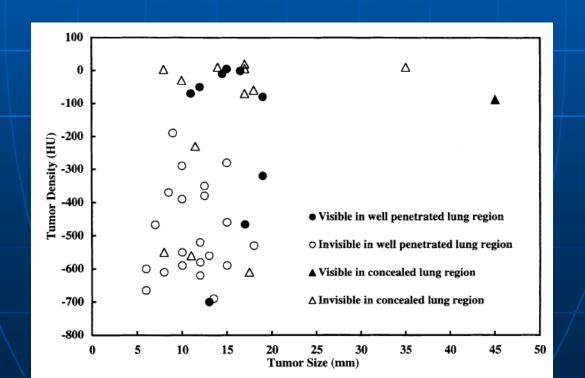
PLCO project - Lung

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

Low-dose chest CT

- First report. Naidich DP; Radiology 1990
- First population-based screening. Sone S; Lancet 1998
- ELCAP. Henschke CI; Lancet 1999
- NLST. NEJM 2011

Low-Dose CT of the Lungs: Preliminary Observations



Mass screening for lung cancer with mobile spiral computed

Shusuke Sone, Shodavu Takashina, Feng Li, Zhibang Yang, Takayoki Honda, Yulchin Manuama, Mise u Hasegaw

Early Lung Cancer Action Project: overall design and findings

The NEW ENGLAND JOURNAL of MEDICINE

Reduced Lung-Cancer Mortality with Low-Dose Computed Tomographic Screening

reduce mortality from this cancer through the use of screening. The advent of lew-tone belief computed temperaphy 60% altered the landscape of lang-cancer screento the first compute a straight of the control of t

ing seas was 24.2% with low-dose CT and 6.9% with radiography over all three monds. A total of 96.4% of the positive screening results in the low-dose CT group and 94.5% in the radiography group were false positive results. The incidence or sing carner was 645 cases per 200,000 person-pears (1000 cancers) in the low-dos representing a relative reduction in mortality from lung cancer with low-dose CT screening of 20.0% (99% CI, 5.8 to 26.7; P=0.004). The rate of death from any cause was reduced in the low-flow CT group, as compared with the radiography group, by 6.7% (9% CL 1.7 on 1.6; P=0.07).

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

△講 「 成為你朋友中第一個說這議的人。

加入書籤: 🚮 📒 Plurk

【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。

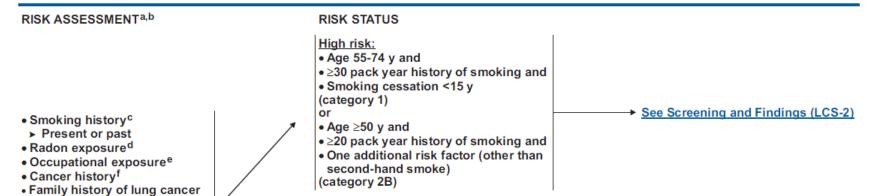
USPSTF成員、史丹佛大學醫學系教授歐文斯(Douglas Owens)表示,在某年齡族群的所有成 人接受篩檢,可能有助減少任何和篩檢有關的歧視,並且能鼓勵民眾接受檢查。

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 瘡,能降低將病毒傳染給未感染者的風險多達96%。



Comprehensive NCCN Guidelines Version 1.2014 **Lung Cancer Screening**

NCCN Guidelines Index LCS Table of Contents Discussion



NCCN

National

Network®

Comprehensive NCCN Guidelines Version 2.2013 **Breast Cancer Screening and Diagnosis**

NCCN Guidelines Index Table of Contents Discussion

SCREENING FOLLOW-UP SCREENING OR SYMPTOM CATEGORY Increased Risk: See NCCN Guidelines for Breast Cancer - Surveillance Section Prior history of breast cancer Women ≥35 y with 5-year risk of invasive breast Annual mammogram^h + clinical breast exam every 6-12 mo cancer >1.7%d Breast awareness^g OR Consider risk reduction strategies (See NCCN Guidelines for Breast Cancer Risk Reduction) LCIS (begin screening at diagnosis) Annual mammogram^h + clinical breast exam every 6-12 mo ▶ beginning at age 30 y Women who have a lifetime risk Breast awareness^g >20% as defined by models that are • Consider risk reduction strategies (See NCCN Guidelines for Breast Cancer Risk Reduction) largely dependent on family historye 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