

Esophageal cancer Study: China Story

Youlin Qiao, Shaoming Wang

Dept. of Cancer Epidemiology

Cancer Institute/Hospital

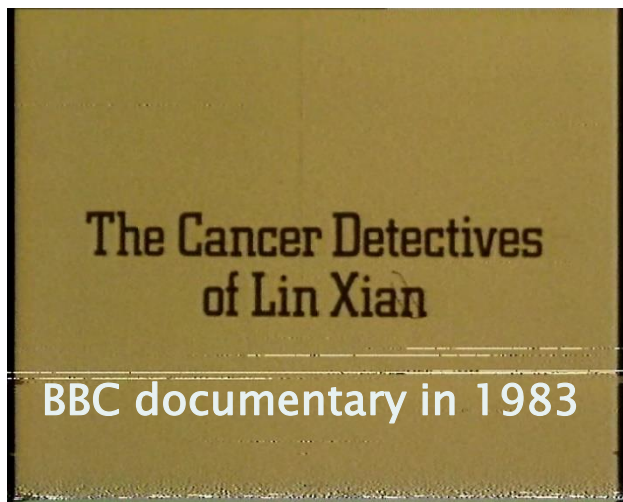
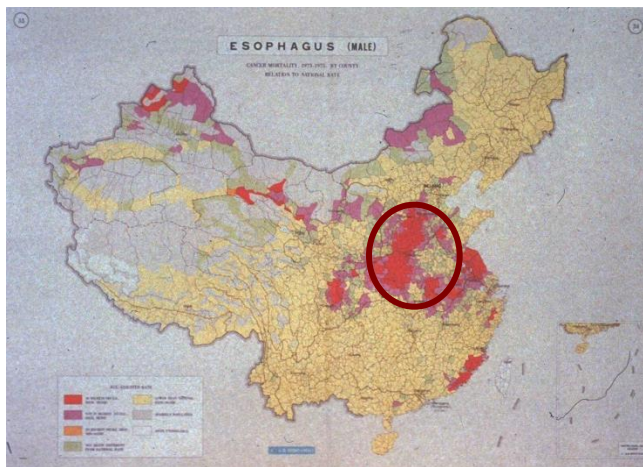
**Chinese Academy of Medical Sciences & Peking Union Medical
college**

Beijing 100021, PR China

Esophageal Cancer Estimated Incidence, Mortality and Prevalence Worldwide in 2012

Estimated numbers (thousands)	Men			Women			Both sexes		
	Cases	Deaths	5-year prev.	Cases	Deaths	5-year prev.	Cases	Deaths	5-year prev.
World	323	281	337	133	119	128	456	400	464
More developed regions	68	56	92	18	15	23	86	71	115
Less developed regions	255	225	245	114	104	105	370	329	349
WHO Africa region	14	13	13	10	9	9	23	21	23
WHO Americas region	30	27	35	10	8	11	40	35	46
WHO East Mediterranean region	9	8	8	8	7	8	17	16	16
WHO Europe region	39	34	40	14	12	14	53	46	54
WHO South-East Asia region	44	40	31	23	22	17	67	62	48
WHO Western Pacific region	187	159	209	68	61	70	255	219	279
IARC membership	101	85	115	36	31	34	137	116	149
United States of America	13	13	17	4	3	4	17	16	21
China	160	140	162	63	57	61	223	197	222
India	27	25	14	15	14	8	42	39	22
European Union	26	22	29	9	7	9	35	30	38

Background

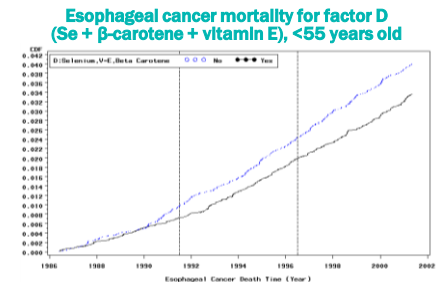
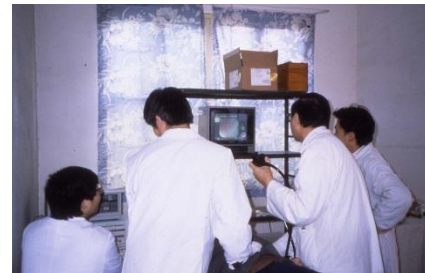


Etiology Study: The Linxian Nutrition Intervention Trials

- Hypothesis: Vitamin/Mineral supplementation can reduce esophageal cancer incidence and mortality
- 2 randomized clinical trials enrolling 33,000 subjects
- Intervention phase 1985-1991, follow-up still ongoing
- The first randomized trials to show that nutritional supplements can reduce human cancer



1983



- **Studies conducted from this cohort:**
- Etiological Study (Nutrition, Infection)
- Chemoprevention Study
- Metabonomic Study



Etiology Study: HPV and ESCC

Study 1:

HPV DNA and Esophageal Dysplasia: A cross-sectional study within the **Cytology** Sampling Study 2 (2002)

Result: No association between HPV DNA and esophageal dysplasia

Study 2:

HPV **serology** and ESCC: A nested case-control study within the Linxian General Population Nutrition Intervention Trial

Result: No association between HPV serology and ESCC

Study 3:

HPV DNA in ESCC **tumors**:

A case-only study conducted in Linxian (2006-7)

Result: No evidence that HPV plays a role in ESCC

Gao GF et al, Int J Cancer 2006;119:1354

Kamangar F et al, Int J Cancer 2006;119:579

Koshiol et al, Int J Cancer 2010;127(1):93-100.

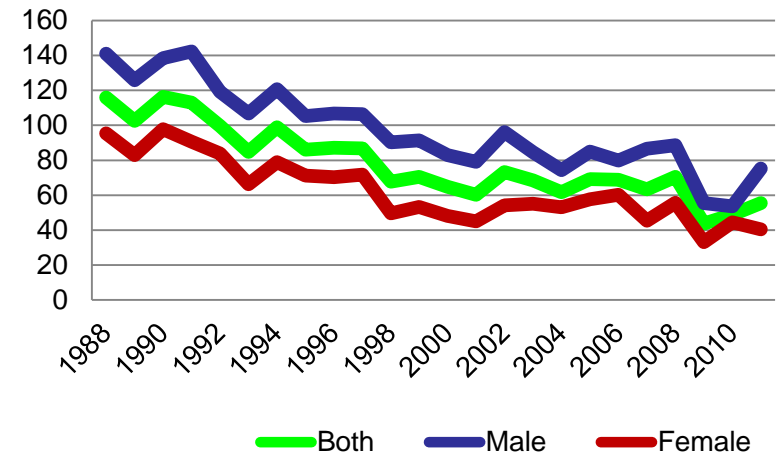


Impact of NCI-CICAMS ESCC Cancer Research Collaboration

- **Epidemiological studies and Nutrition Intervention Trial (NIT)**
- **Early detection of esophageal cancer & its precancerous lesion research in China (DCPC/DCEG)**
- Cytological screening sampling study I & II
- Endoscopy screening method study (iodine staining & biopsy)
- Chemoprevention of esophageal squamous cell carcinoma
- NCC's Upper GI Endoscopy Cohort Studies

- **Esophageal cancer screening DEMO project of MOF in 2005**
- **Cost-effectiveness analysis on esophageal cancer screening projects by MOST in 2007**

Mortality of ESCC in Linzhou





Children walk along Health Street, near the medical compound in Linzhou where Chinese and American scientists are collaborating.



A Chinese man whose wife survived esophageal cancer smokes a cigarette.

Diplomacy in the Operating Room

U.S., Chinese Scientists Cooperate to Unravel Esophageal Cancer

By JOHN POMFREY
Washington Post Foreign Service

LINZHOU, China—In a Spartan red-brick health center here, next to a metal-work shop straight out of the Middle Ages, U.S. and Chinese physicians operated recently on Chinese peasants with state-of-the-art medical equipment to treat cancer of the esophagus.

For centuries, what the Chinese call "the swallowing disease" has been a main killer in this rugged region; these days a stunning 20 percent of the deaths in this area of several million people are from this cancer alone.

U.S. doctors say the procedures being tried here—involving Chinese diagnostic techniques and a Japanese-developed experimental surgery—could help fight one of the fastest growing cancers in the United States—adenocarcinoma, which mostly affects white men—and the other main type of esophageal cancer, squamous cell carcinoma, which mostly affects middle-aged African American men.

The cooperative research in this mountainous zone, a redoubt for Communist fighters during World War II, is one of hundreds of projects involving Chinese and American scientists.

Launched in the 1970s, shortly after President Nixon's historic trip to China, U.S.-Chinese scientific cooperation has grown into one of the underpinnings of Washington's relations with Beijing and into one of the most productive such relationships in the world, according to U.S. and Chinese scientists.

"Science was used as a tool to normalize relations. Back then it was more formula than substance," said Alice Hogan, an official with the National Science Foundation now at the White House Office of Science and Technology Policy. "The remarkable thing is that we are almost completely out of that phase."



Since the 1980s, the National Science Foundation has funded more than 500 projects dealing with basic science in China, backing everything from geology to physics. Last year, the National Institutes of Health supported more than 80 projects in China, continuing a 10-year trend. China is one of three countries where NIH funds a center for tropical medical research—the Shanghai Institute of Parasitic Diseases.

"The Americans have a long-term approach," said Dong Zhiwei, director of the Cancer Institute and Hospital at the

See CHINA, A21, Col. 1



In Linzhou, from left, physician David Fleischer, nurse Bonita Liu, Sanford Davsey and Lai Shao-Qing watch a monitor as they use an endoscope to view a patient's esophagus.

THE LANCET Oncology

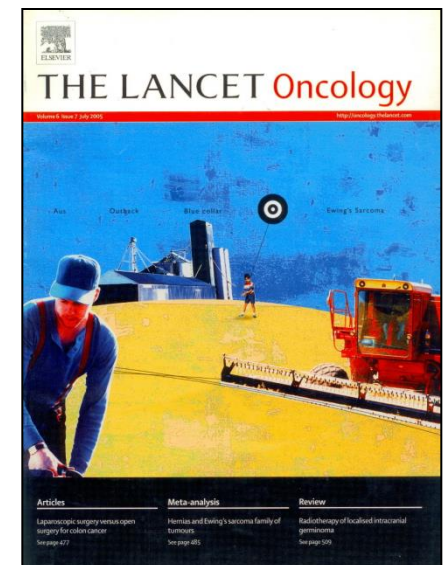
Volume 6. Issue 7. July 2005

Chinese government urged to tame cancer threat

Although China's gross domestic product secured its place as a recognised economic power with an increasing importance worldwide, chronic disease, such as cancer, is overshadowing the country's economic success. Cancer now claims 1.4–1.5 million lives a year in China, compared with 700 000 in the 1970s—equal to one in every five deaths. This mortality could double to 3 million in the next 20 years if the government fails to take effective measures now.

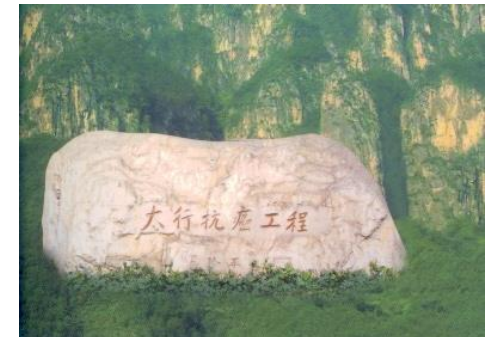
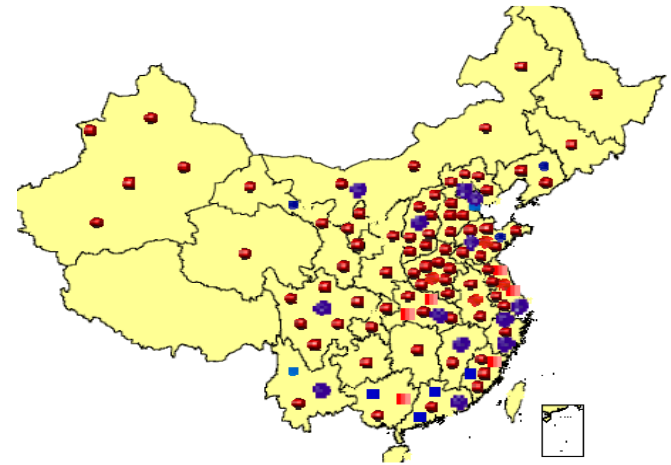


A symposium held in Hebei highlighted the fight against cancer



The National Esophageal Cancer Early Detection and Treatment Program of China

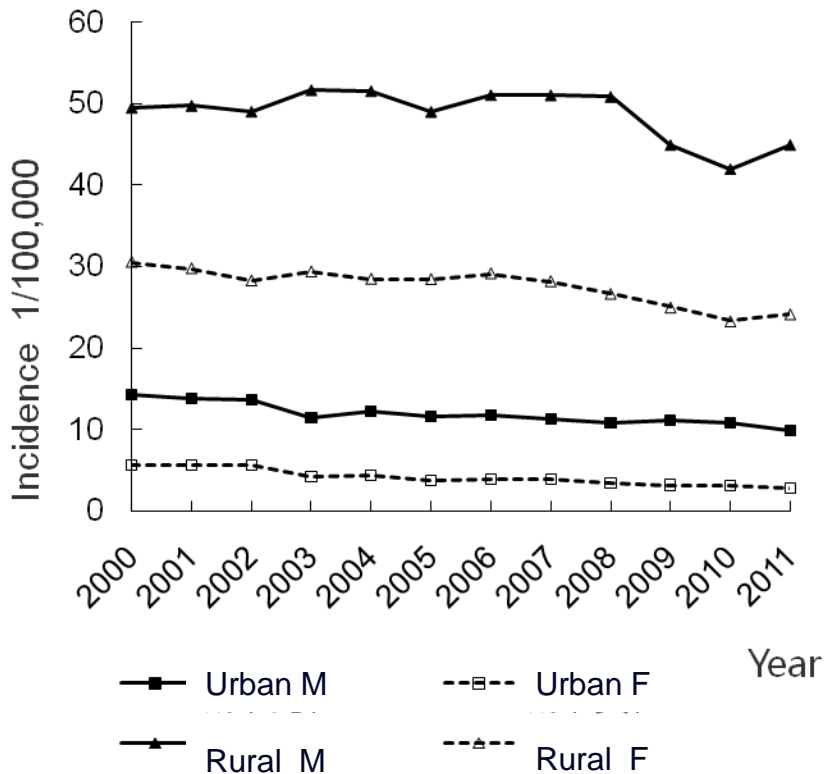
- Lugol's chromoendoscopy
- Biopsy of USLs > 5mm
- Endoscopic Tx of flat HGD
- >121 Field Sites
- Each screening ~ 2,000 asx adults (40-75) per year
- > 189,736 screened each year
- > 40 million adults of this age live in the high risk areas
- Need an accurate non-endoscopic primary screen that can screen millions and triage those at highest risk to endoscopy



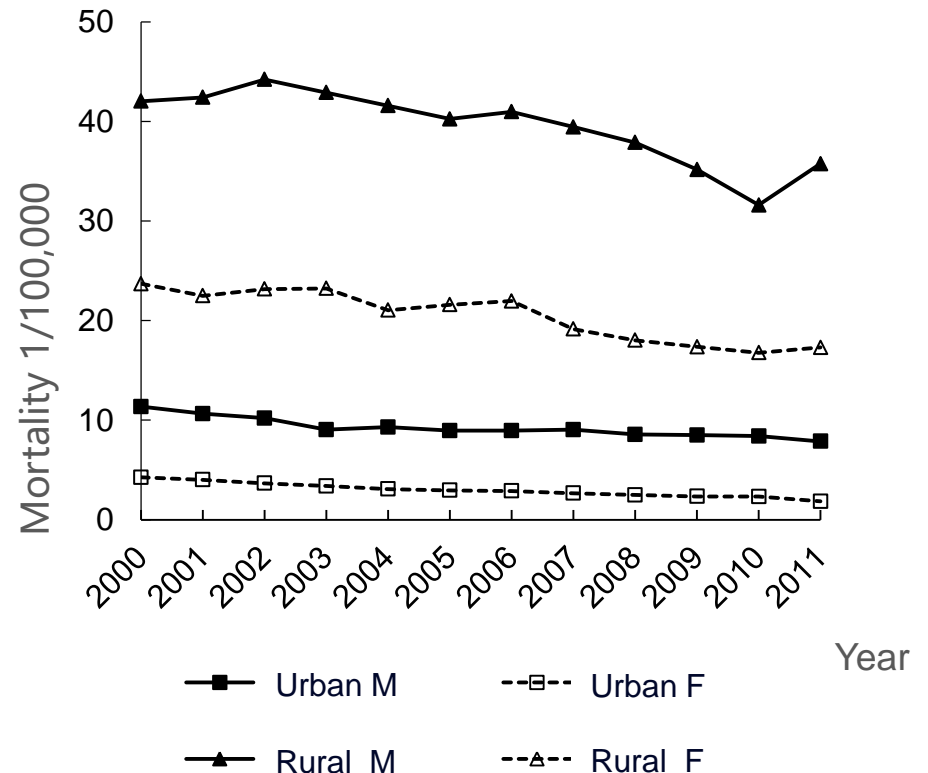
Rates changes of EC in China

Data from 22 cancer registry sites of China, 2016

EC Incidence



EC Mortality



- ✓ ESCC mortality has decreased by 41.6% during the last three decades
- ✓ Still remains the fourth common cancer in both rural and urban
- ✓ Most cases arise from the resourced limited rural areas

Difficult questions for future study

- ✓ **Focus on etiology and prevention:**
 - **Nutrition and other risk factors of ESCC**
(Serum Metabonomic Study, Temperature hot dietary study)
 - **Upper GI tract microbiome and ESCC**
 - **Nutrition intervention/Chemoprevention Study**
(i.e. Selenium, Aspirin)

Acknowledgement !!!

