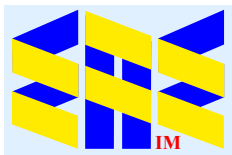


Master Class V

‘Organ-based Cancer Specifics’

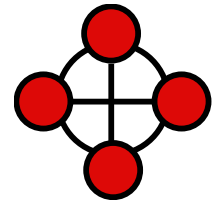
‘Специфика рака на уровне органа’



Malcolm A Moore

EurAsian Education - Internal

Asian Pacific Organization for Cancer Prevention



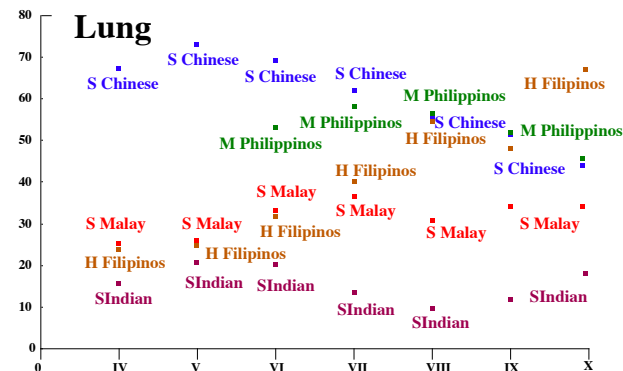
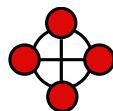
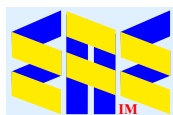
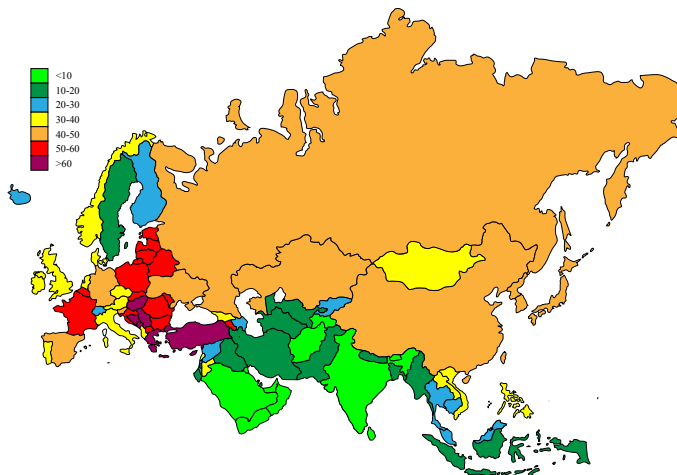
Table/Таблица. Cancer Incidence / Mortality Ranking / Рейтинг Заболеваемости / Смертности Раком*

	Incidence Заболеваемость М/М					Incidence Заболеваемость F/Ж					Mortality/ Смертность				
Fin/Фин	P/П	CR/K	L/J	M/M	N/H	B/MЖ	CR/K	M/M	L/J	T/ЩЖ	L/J	B/MЖ	P/П	CR/K	P/ПЖ
Rus/Рос	L/J	P/П	CR/K	S/Ж	K/П	B/MЖ	CR/K	Corp	C/ШМ	S/Ж	L/J	B/MЖ	CR/K	P/П	S/Ж
Est/Эст	P/П	L/J	CR/K	S/Ж	B/МП	B/MЖ	CR/K	C/ШМ	L/J	M/M	P/П	L/J	CR/K	B/MЖ	S/Ж
Lat/Лат	P/П	L/J	CR/K	B/МП	K/П	B/MЖ	CR/K	C/ШМ	T/ЩЖ	L/J	P/П	L/J	B/MЖ	CR/K	S/Ж
Lit/Лит	P/П	L/J	CR/K	K/П	S/Ж	B/MЖ	Corp	CR/K	M/M	K/П	L/J?	L/J	B/MЖ	CR/K	S/Ж
Bel/Бел	P/П	L/J	CR/K	S/Ж	K/П	B/MЖ	CR/K	C/TM	T/ЩЖ	S/Ж	L/J	CR/K	P/П	B/MЖ	S/Ж
Mol/Мол	L/J	CR/K	P/П	B/МП	S/Ж	B/MЖ	CR/K	C/ШМ	C/TM	L/J	L/J	B/MЖ	CR	P/П	L/П
Ukr/Укр	L/J	CR/K	P/П	S/Ж	B/МП	B/MЖ	C/TM	CR/K	C/ШМ	T/ЩЖ	L/J	B/MЖ	CR	P/П	S/Ж
Geo/Гру	L/J	P/П	CR/K	B/МП	S/Ж	B/MЖ	CR/K	C/TM	Ovar	Brain	B/MЖ	L/J	P/П	CR/K	S/Ж
Arm/Арм	L/J	P/П	CR/K	S/Ж	B/МП	B/MЖ	CR/K	L/J	S/Ж	P/ПЖ	L/J	B/MЖ	P/П	CR/K	S/Ж
Tur/Тур	L/J	P/П	CR/K	B/МП	S/Ж	B/MЖ	T/ЩЖ	CR/K	L/J	S/Ж	L/J	B/MЖ	P/П	S/Ж	T/ЩЖ
Aze/Азе	L/J	S/Ж	CR/K	P/П	B/МП	B/MЖ	CR/K	S/Ж	O/П	L/J	B/MЖ	L/J	S/Ж	CR/K	O/П
Tkm/Ткм	S/Ж	L/J	O/П	L/П	CR/K	B/MЖ	C/ШМ	O/П	S/Ж	CR/K	B/MЖ	S/Ж	C/ШМ	L/J	O/П
Uzb/Узб	S/Ж	L/J	CR/K	P/П	O/П	B/MЖ	C/ШМ	CR/K	S/Ж	L/П	B/MЖ	S/Ж	L/J	C/ШМ	L/П
Kaz/Каз	L/J	S/Ж	CR/K	P/П	O/П	B/MЖ	C/ШМ	CR/K	C/TM	S/Ж	L/J	B/MЖ	S/Ж	CR	C/ШМ
Kyr/Кыр	S/Ж	L/J	L/J	CR/K	P/ПЖ	B/MЖ	C/ШМ	S/Ж	Ovary	CR	S/Ж	L/J	C/ШМ	L/П	B/MЖ
Tad/Тад	S/Ж	L/J	CR/K	L/П	O/П	B/MЖ	S/Ж	C/ШМ	C/TM	L/J	S/Ж	B/MЖ	L/J	C/ШМ	L/П
Mon/Мон	L/П	S/Ж	L/J	O/П	CR/K	L/П	S/Ж	C/ШМ	O/П	B/MЖ	L/П	S/Ж	L/J	O/П	C/ШМ

*GLOBOCAN 2020 (Sung et al., 2021) Ranking/Рейтинг 1-5; М/М, Male/Мужской; F/Ж Female/Женский; P/П, Prostate/ Простата; **CR/K Colorectal/Колоректум**; **L/J, Lung/Легкое**, M/M, Melanoma/Меланома; N/H, Non-Hodgkins Lymphoma/ Неходжкинской Лимфомы В/МЖ, **Breast/Молочной Железы**; T/ЩЖ, Thyroid/Щитовидная Железа; P/ПЖ, Pancreas/Поджелудочная Железа; K/П, Kidney/Почка; **S/Ж, Stomach/ Желудок**; **C/ШМ, Cervix/Шейка Матки**; B/МП, Bladder/Мочевой Пузырь; L/П, Liver/Печень; O/П, Oesophagus/Пищевод; C/TM, Corpus Uterus/ Тело Матки

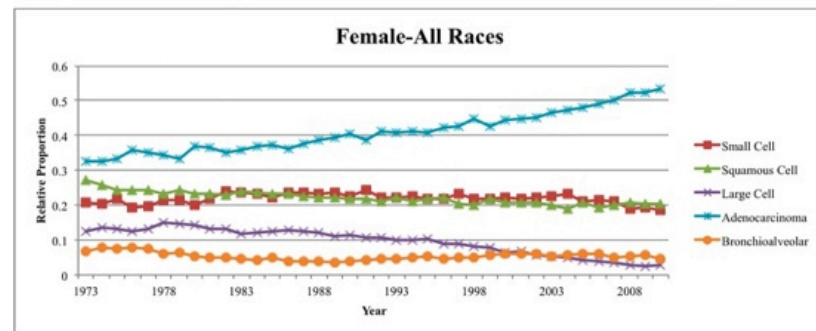
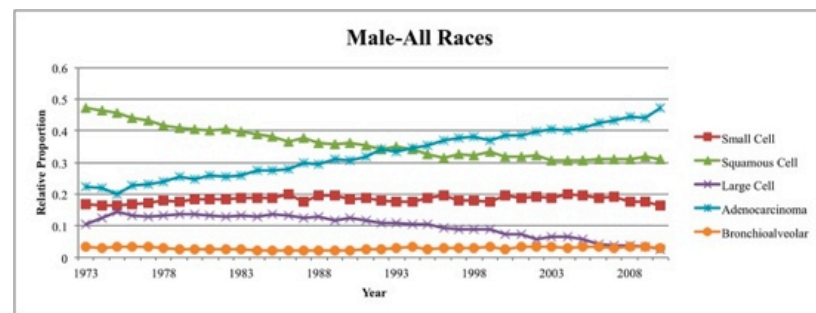
Lung Cancer I

Trachea
Bronchus
Bronchioles
Alveoli
Type II
Clara Cells



Male/Female	SCC	AC	SCC	AC
China, Cixian	26.5	11.5	5.1	11.1
China, Guangzhou	7.2	16.0	1.2	10.4
Japan, Aichi	9.6	18.4	1.1	10.8
Korea	14.4	13.9	1.1	9.0
Thailand, Bangkok	1.8	6.2	0.4	3.7
Thailand, Chiang Mai	5.5	11.8	2.8	8.1
Penang, C	5.0	12.2	0.9	6.0
Penang, M	3.2	7.6	0.3	2.5
Penang, I	1.6	7.7	1.0	2.3
Viet Nam, HCM	2.5	13.2	0.3	5.6

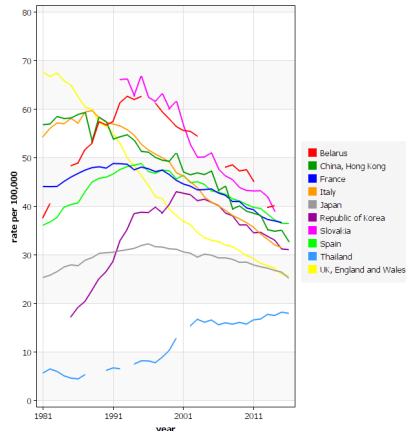
CIV XI /100,000



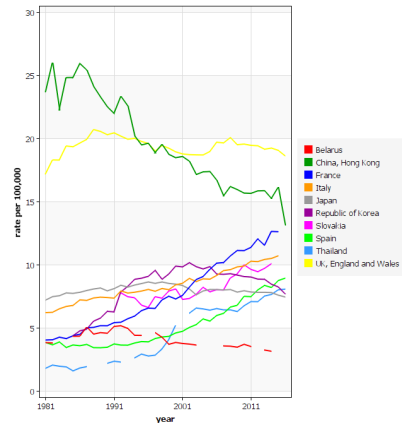
Citation: Meza R, Meernik C, Jeon J, Cote ML (2015) Lung Cancer Incidence Trends by Gender, Race and Histology in the United States, 1973–2010. PLoS ONE 10(3): e0121323

Lung Cancer II

Mortality from Lung cancer
Age-standardised rate (World): Male, all ages



Mortality from Lung cancer
Age-standardised rate (World): Female, all ages

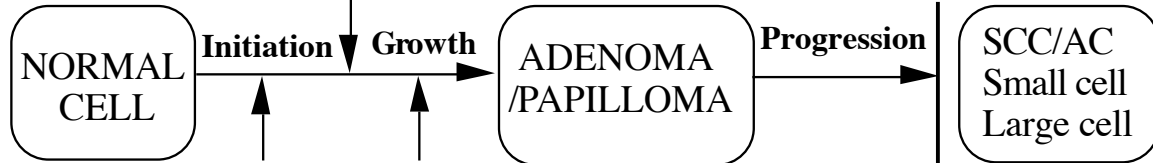


Primary Prevention

Smoking and Carcinogens

Secondary Prevention

Avoidance Dietary supplementation



Irritants Smoking

Avoidance

CT/X-rays Screening and resection

Genetic Abnormalities in Lung Cancers

PIK3CA mutations	SCC
Expression of pAkt	SCC
Loss of INPP4B	SCC
EGFR mutations	AC
KRAS mutations	AC
TROP2 expression	AC

Multi-Site Case Control Study

Female lung cancer cases

Histopathological types

Molecular subtypes

Risk factors

Anthropomorphic - age

Smoking exposures

Occupation exposures

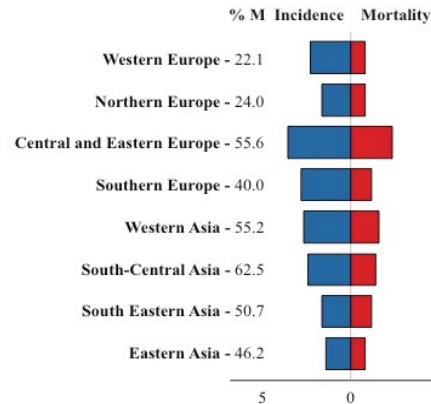
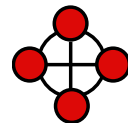
Diet and exercise

Outcome factors

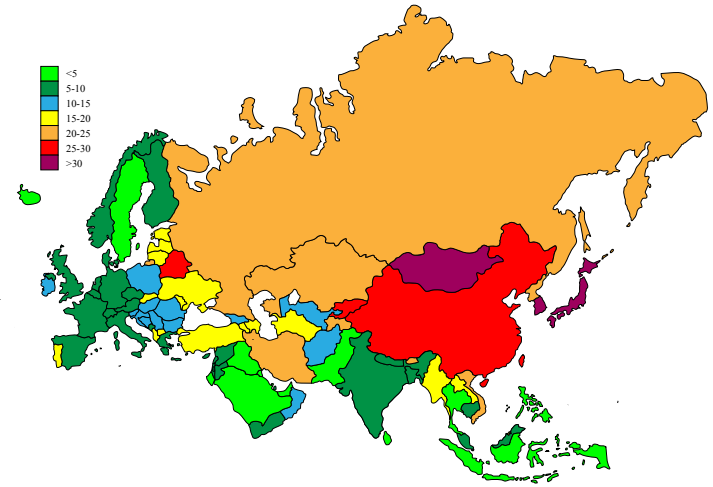
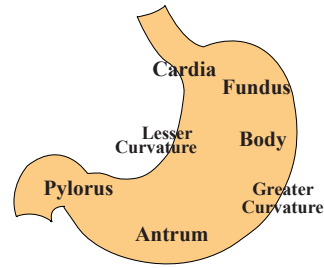
Stage-specific survival

Quality of life

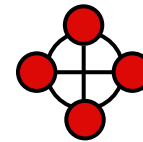
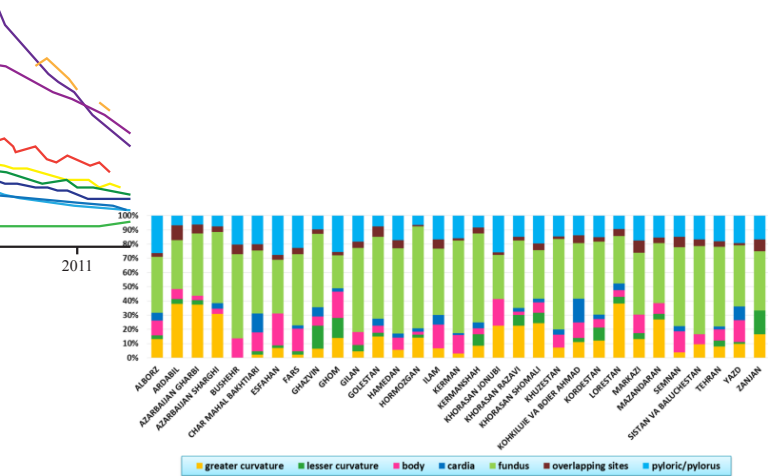
Cost issues



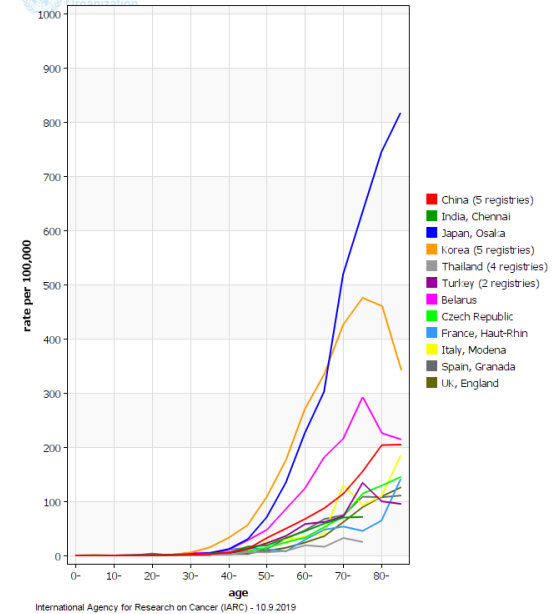
Gastric Cancer I



y



Stomach (2012): Male
World Health Organization

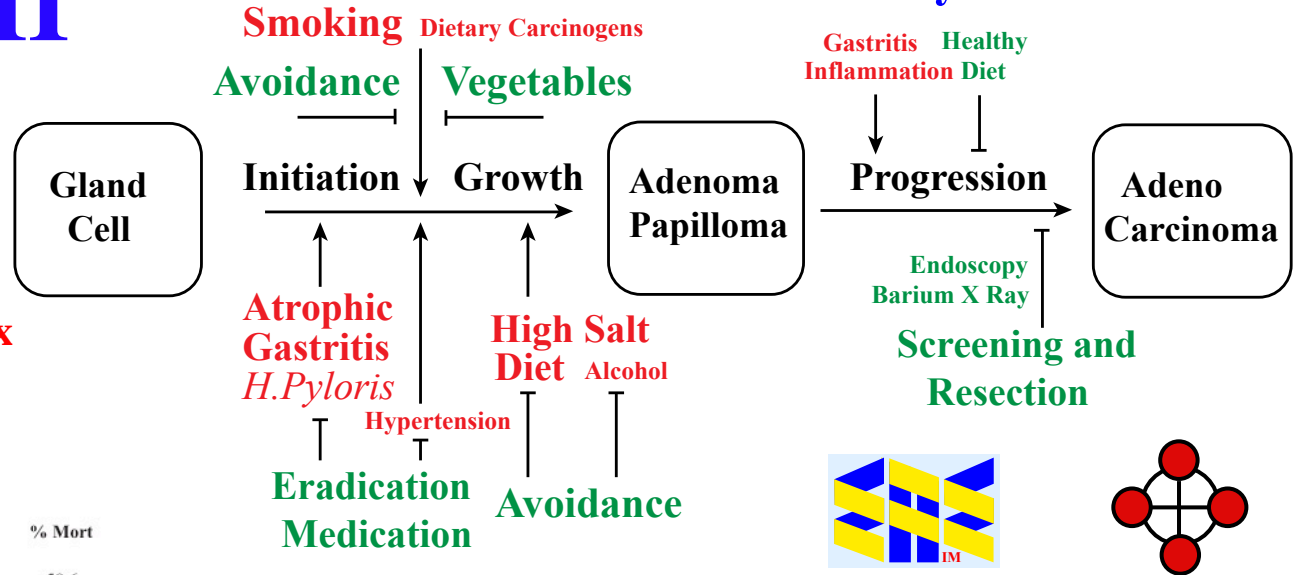


Moradian et al (2022) Trend of geographical distribution of stomach cancer in Iran from 2004 to 2014. BMC Gastroenterology, 22, 4.

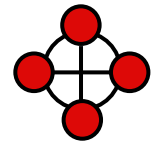
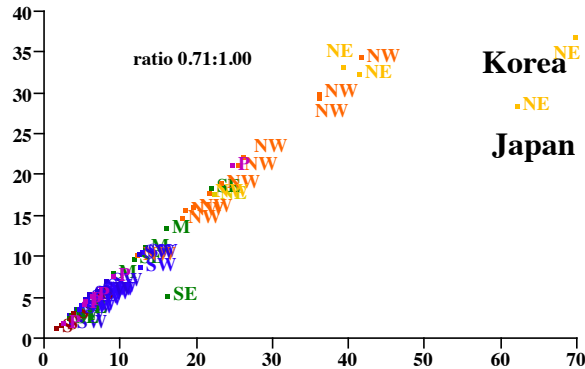
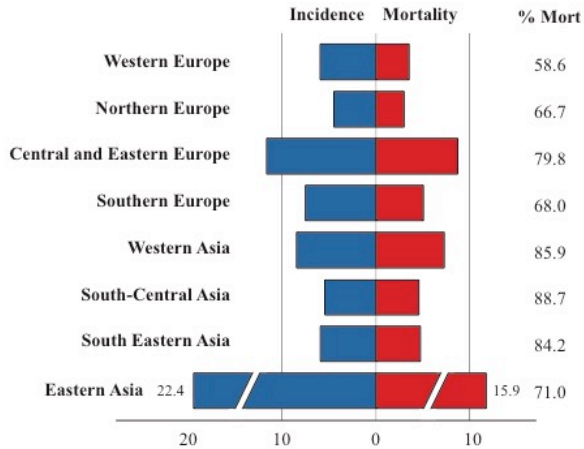
Gastric Cancer II

Primary Prevention

Secondary Prevention



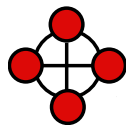
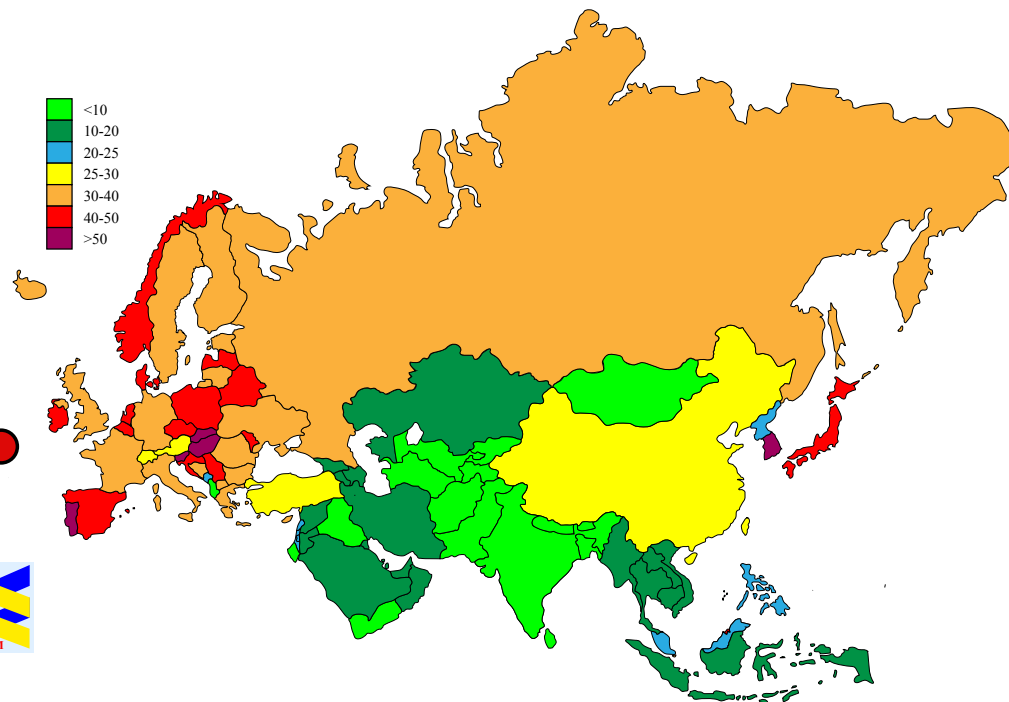
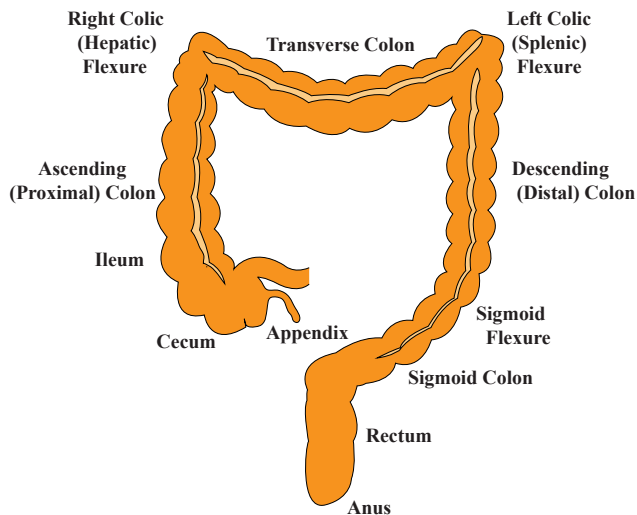
Obesity/
Gastro-esophageal reflux
Coconut milk?



Outcome Factors

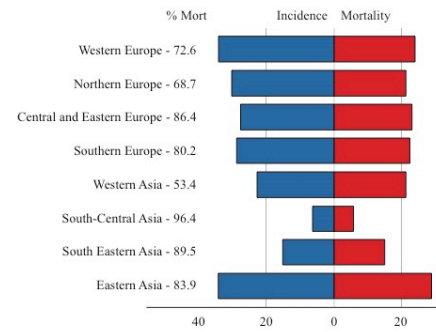
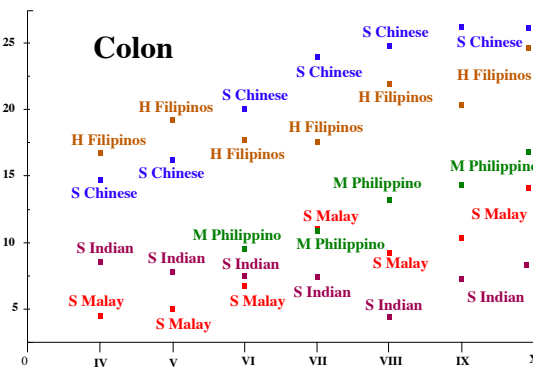
- Personal characteristics
- Medical history
- Screening: Endoscopy/Barium X-ray
- Pepsinogen I/II Ratio
- Tumour characteristics
- Site: cardia/non-cardia
- Subtypes: diffuse/intestinal
- Treatment

Colorectal Cancer I



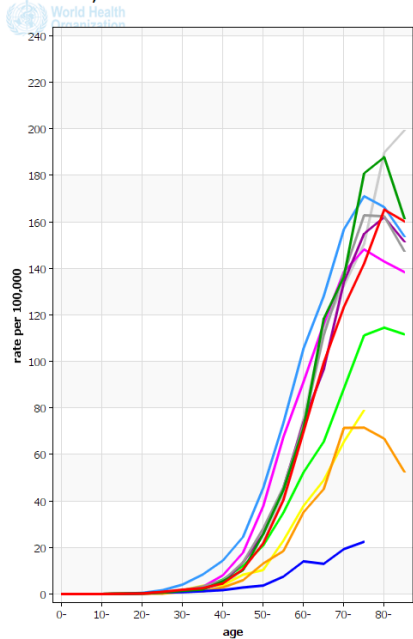
Colon/Rectum	Male	Female	Male	Female
China, Cixian	6.2	6.0	7.8	7.5
China, Guangzhou	16.0	12.6	10.9	6.9
Japan, Aichi	26.0	18.4	18.2	9.2
Korea	27.0	15.2	23.0	11.1
Viet Nam	11.1	7.2	7.7	4.2
Thailand, KK	6.6	6.1	5.4	3.3
Malaysia, C	16.4	16.0	11.7	8.4
Malaysia, M	6.7	6.0	8.4	4.6
Malaysia, I	11.5	8.4	8.9	5.4

CIV XI /100,000



Colorectal Cancer II

Rectum, Male

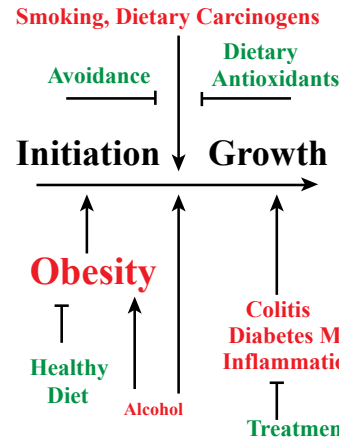


OS-XI. International Agency for Research on Cancer (IARC) - 15.6.2019

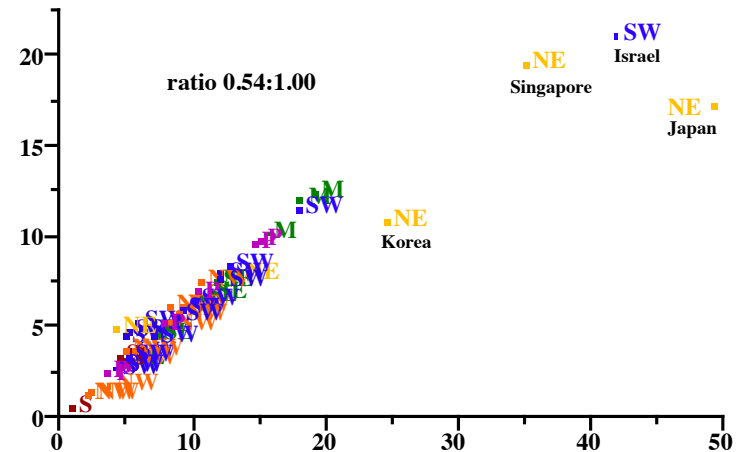
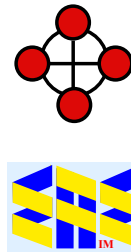
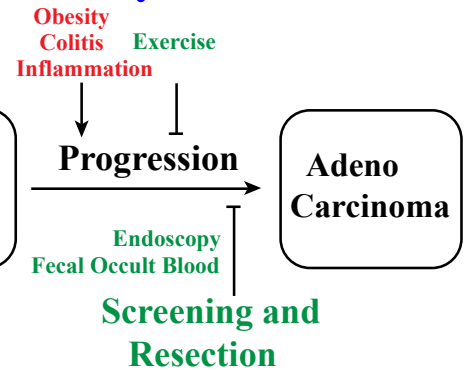
Outcome Factors

- Personal characteristics
- Medical history
- Screening: Endoscopy/ Fecal Occult Blood
- Tumour characteristics
- Site: proximal/distal/rectum
- Treatment

Primary Prevention

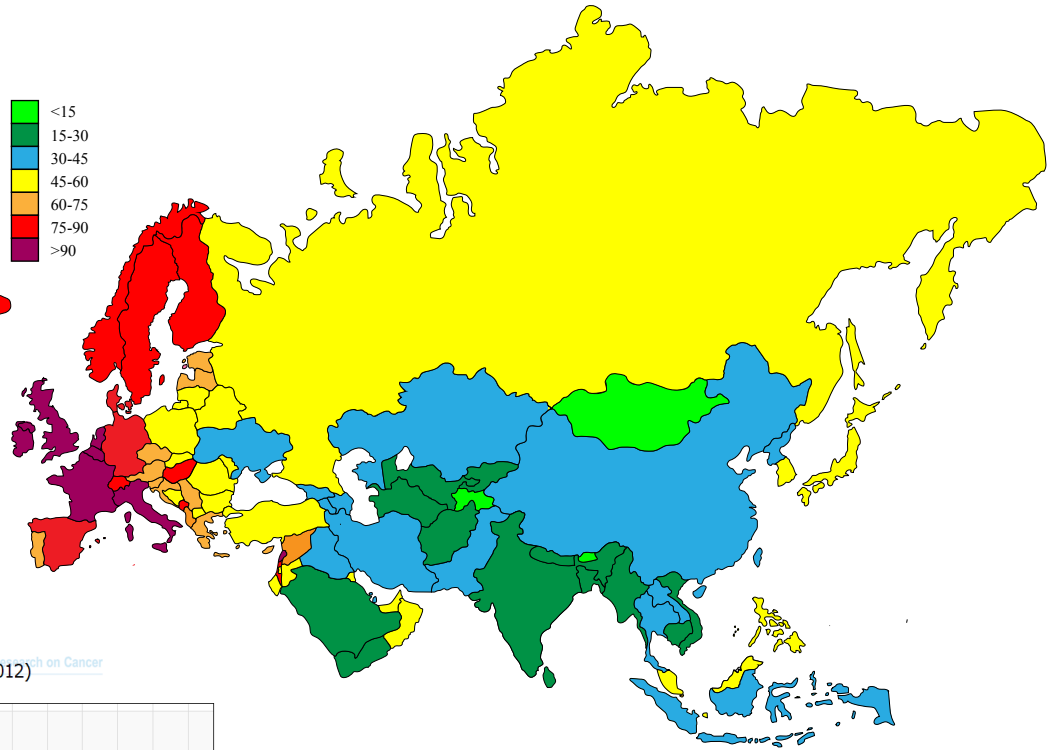
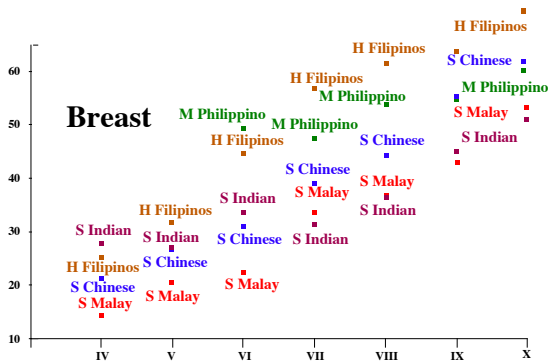


Secondary Prevention

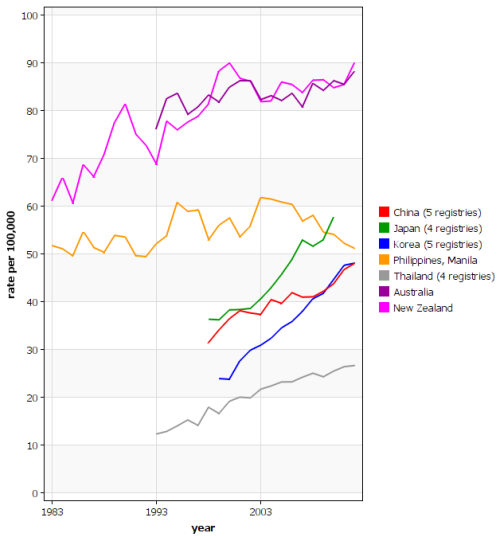


Mor tality/Incidence Data for the Colorectum (Global 2002; Ferlay et al., 2004)

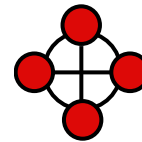
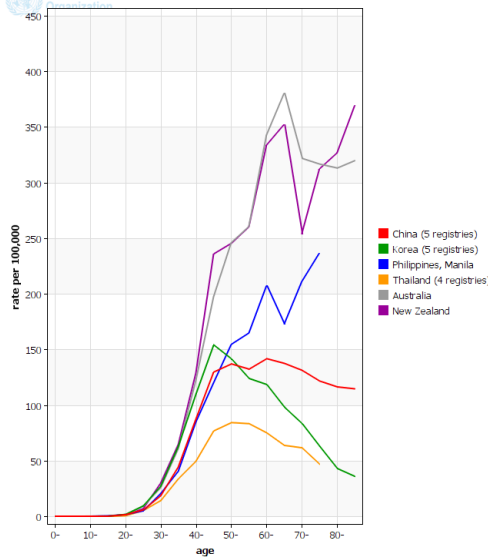
Breast Cancer I



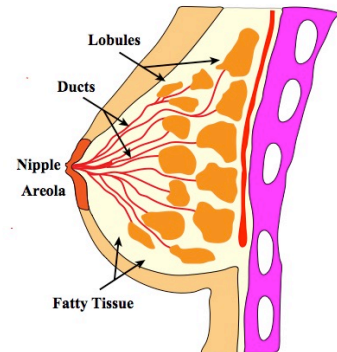
Breast
Age Standardised Incidence Rate (World), age [0-85+]

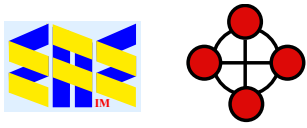


Breast (2008-2012)

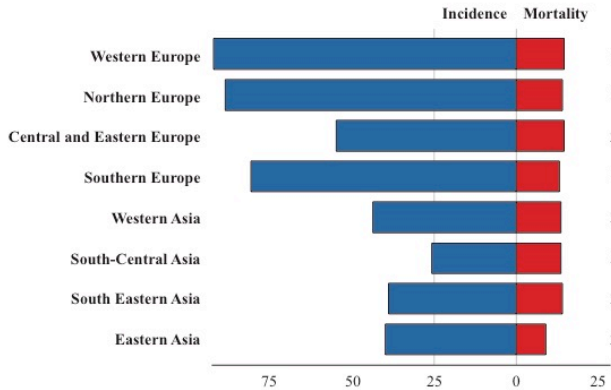
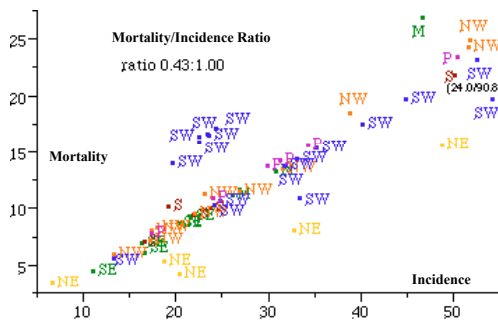


**Ductal
Lobular**

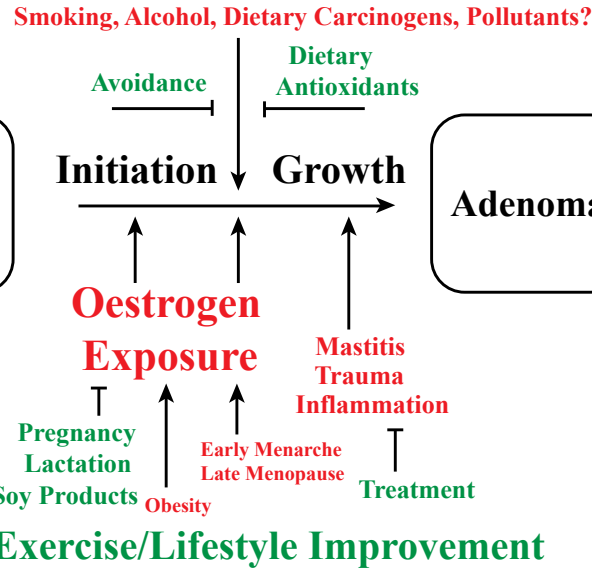




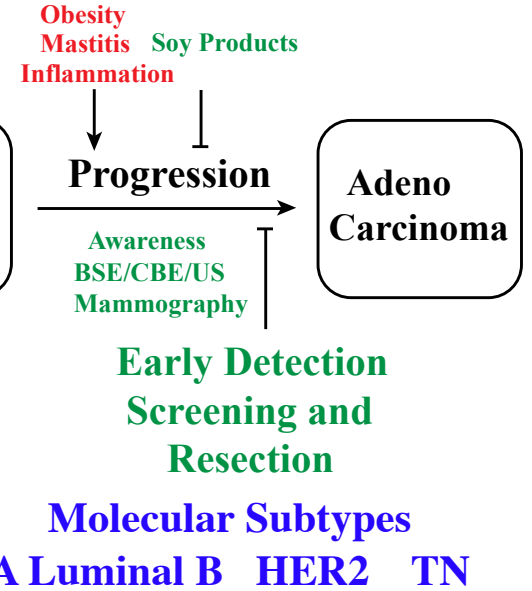
Breast Cancer II



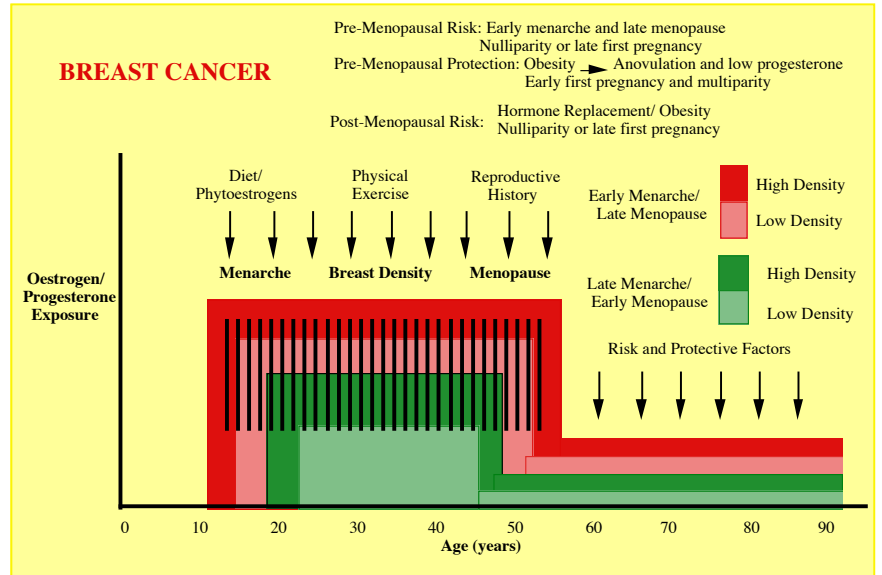
Primary Prevention



Secondary Prevention

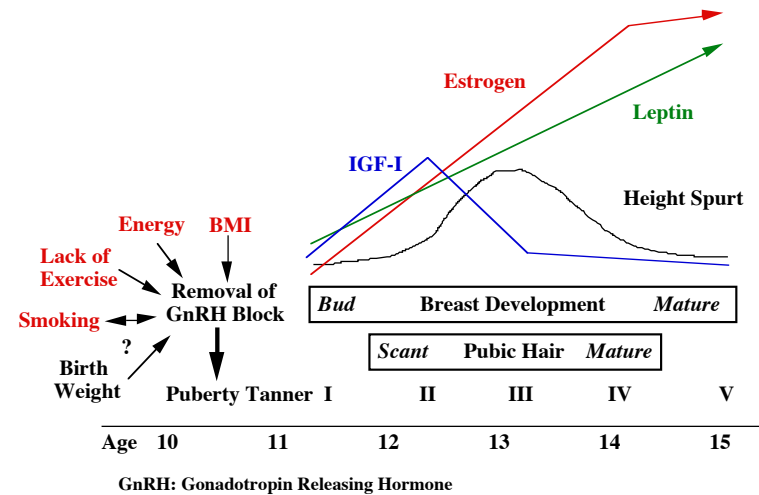


Stage I 95%
Stage IV 10%



Breast Cancer Research

Menarche/Menopause



Questionnaire Items:

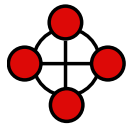
- 1) Anthropomorphic: Height, Weight (also at birth, recent change?), Waist, Hip, BMI, WHR, Breast characteristics
- 2) Age at Thelarche, Age at Menarche, Transition period length, Cycle Period, Regularity
- 3) Lifestyle: Nutrition, Meal regularity, Physical exercise, Sleep, Stress, Smoking, Sex, Alcohol consumption
- 4) Knowledge and Attitude: Breast and cervical cancer, Self breast examination, Pap smear

Biochemistry Parameters (selected volunteers):

- 1) Hormonal: Salivary oestrogen and progesterone daily over one cycle
- 2) Blood sample: Glucose tolerance test, polymorphisms

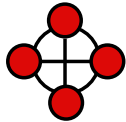
Mammography (selected volunteers):

- 1) Density and size
- 2) Other characteristics



Cohort? Students/Staff at Universities?

Breast Cancer Costs



**Education
Screening**

**Materials and Campaigns
Breast Self Examination
Clinical Breast Examination
Mammography**



Diagnosis

**Biopsy
Immunohistochemistry**

Treatment

**Surgery - Resection
Intraoperative Assessment
Surgery - Reconstruction
Radiotherapy
Chemotherapy
Palliative Medicines**

Outcome Factors

Personal characteristics

Medical history

Screening: BSE/CBE/US/MAM

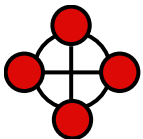
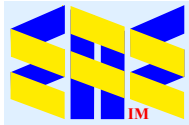
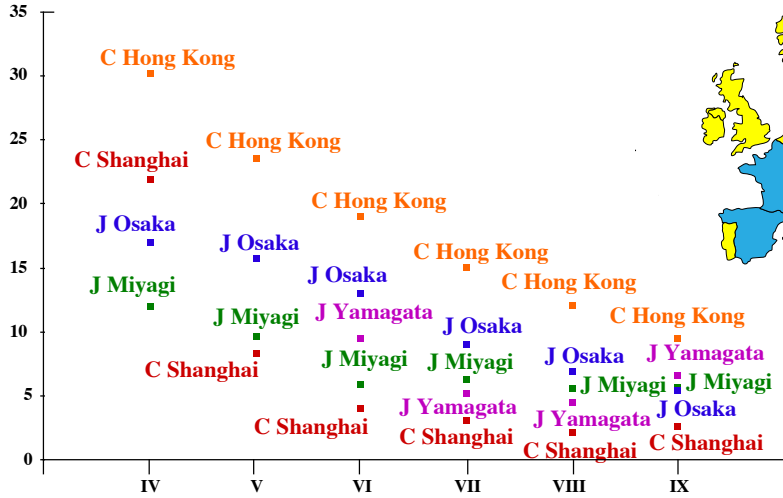
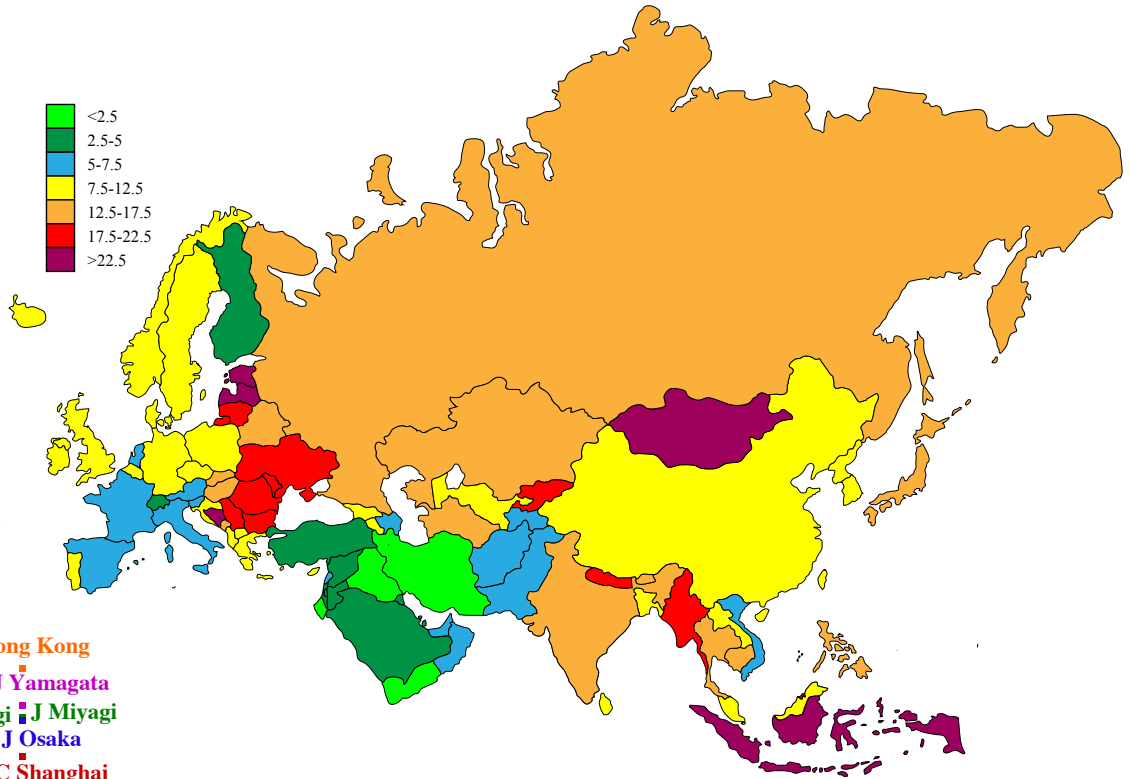
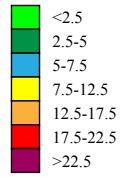
Tumour characteristics

Site: ductal/ lobular

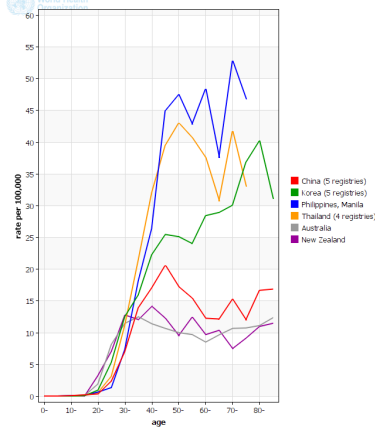
Molecular Subtypes: ER/PR/HER2

Treatment

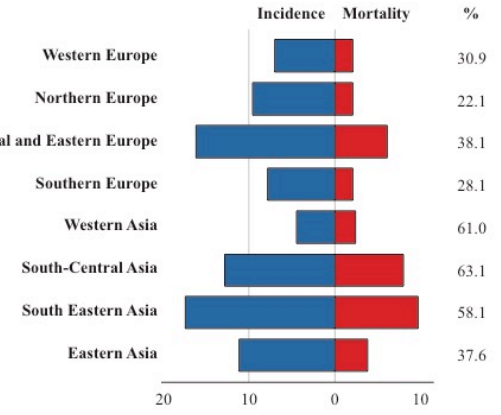
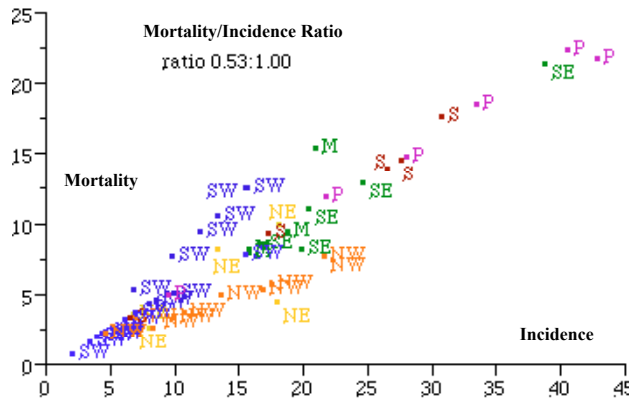
Cervical Cancer I



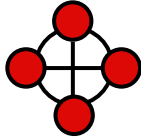
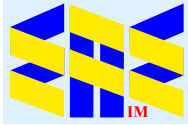
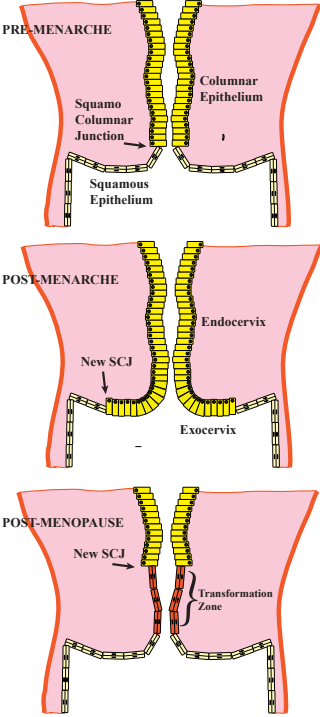
Cervix uteri (2008-2012)



International Agency for Research on Cancer (IARC) - 3/11/2019

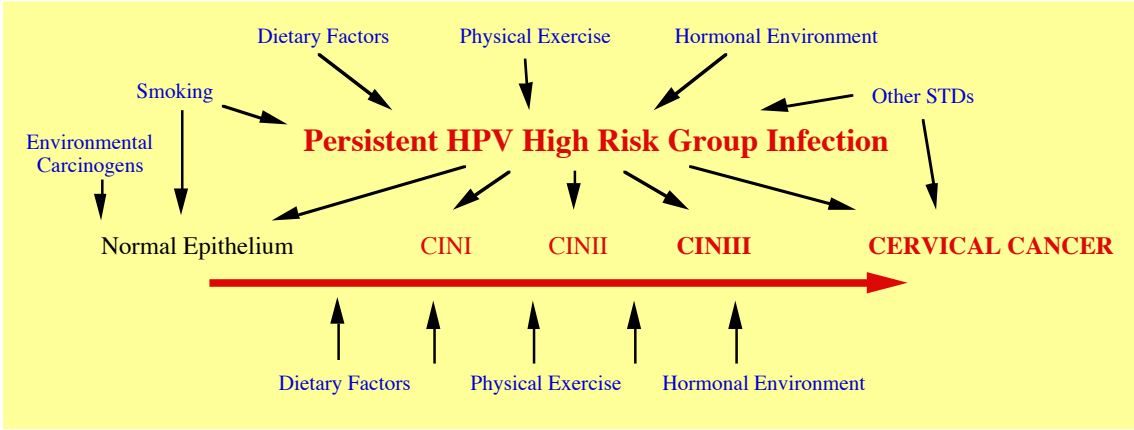
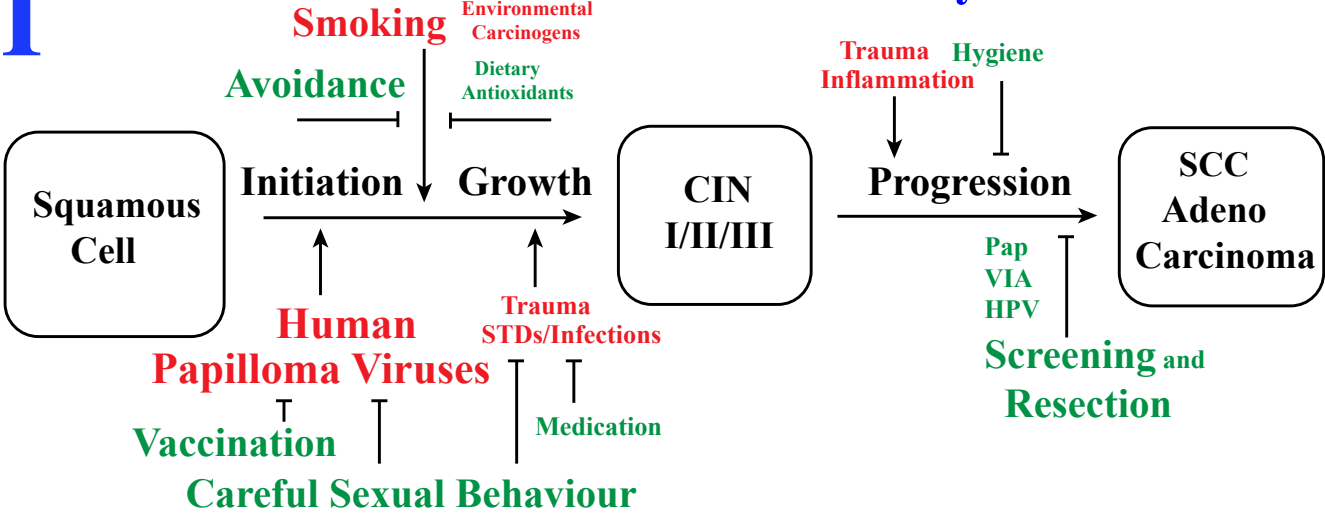


Cervical Cancer II

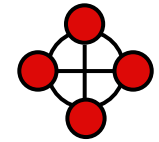


Primary Prevention

Secondary Prevention



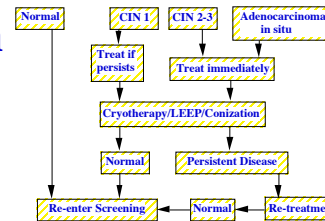
Cervical Cancer Screening - Factors to Consider



Persuasion
Set up
Vaccine
Staff
Location

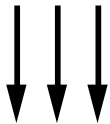
Incidence
Mortality
HPV Types
Compliance
Sensitivity
Specificity
Predictive potential

Persuasion
Set up
Test costs
Staff
Location

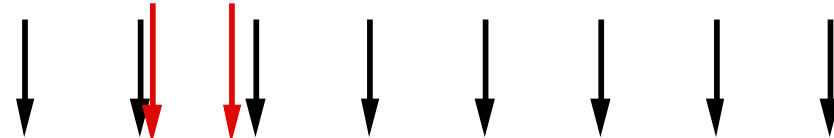


Colposcopy
Treatment
Surgery
Chemotherapy
Radiotherapy

Vaccination



Screening: Pap smear/HPV/VIA/VILI



Virginal Exposure starts



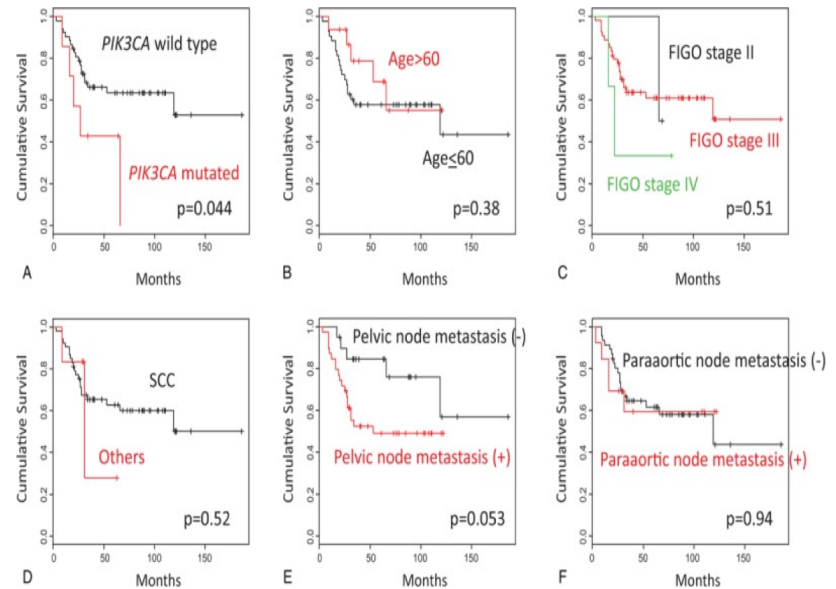
Transient/Persistent Infection



Age	10	15	20	25	30	35	40	45	50	55	60	65	70	75
India		(30)			4.4 (7.8)		12.4 (22)		18.6 (33)		14.9 (27)		6.1 (7.8)	
Thailand		(20)			2.7 (7.9)		7.2 (25)		10.2 (36)		7.2 (25)		1.1 (2.3)	
Japan		(8)			1.5 (6.7)		4.8 (21)		5.8 (26)		5.5 (24)		4.9 (22)	

Cervical Cancer Research - Costs and Survival

Education	Materials and Campaigns
Vaccination	Bivalent/Quadrivalent
Screening	Pap Smear – Thin Prep
	Visual Inspection
	HPV Testing
Diagnosis	Colposcopy/Biopsy
Treatment	Cryotherapy
	LEEP
	Surgery
	Radical Hysterectomy
	Radiotherapy
	Brachytherapy
	Chemotherapy
	Palliative Care
Peripheral	Productivity Loss
Costs	Psychological and physical side effects



Lachkar et al 2018, Medicine, 97:e11392



Outcome Factors

Personal characteristics

Medical history

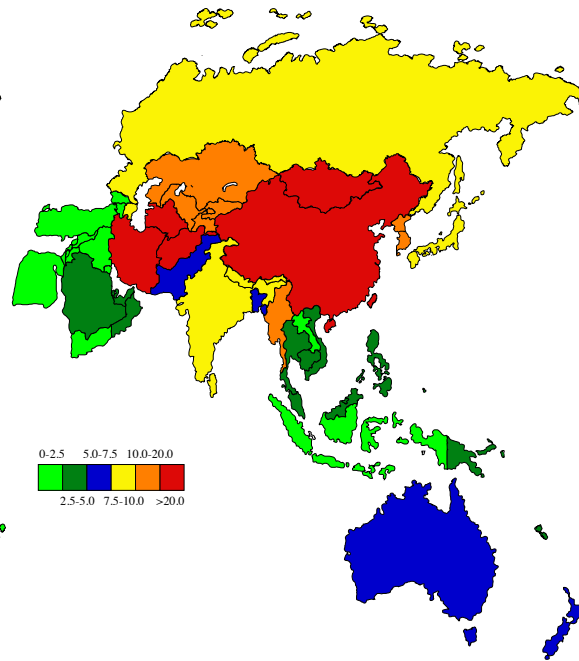
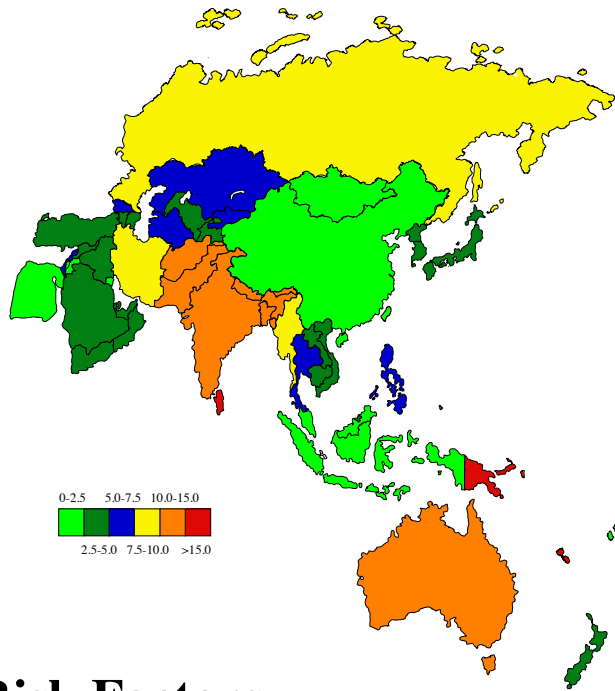
Screening: PAP/VIA/HPV

Tumour characteristics

Histopathology: SCC/Adenocarcinoma

Treatment

Oral Cavity/Oesophageal Cancer



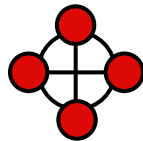
Risk Factors

Smoking, Opium,
Grit, Water pollution,
Zinc Deficiency

Obesity

Risk Factors

Betel, Smoking, Alcohol,
HPV, Sun, Dietary Carcinogens
Genetic Background? NPC

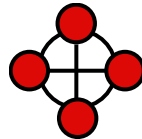
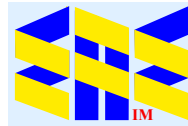
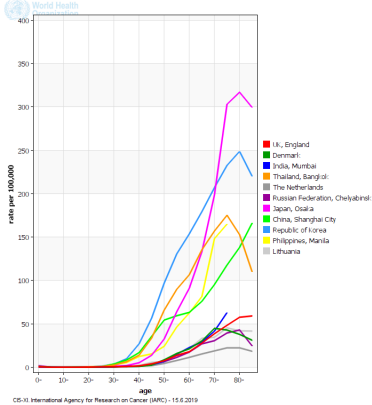


Male/Female	SCC	AC	SCC	AC
China, Cixian	130.1	1.8	83.6	0.8
China, Guangzhou	5.4	0.2	0.9	0.1
Penang, C	0.9	0.9	0.2	0.1
Penang, M	0.4	1.6	0.6	0.1
Penang, I	1.4	0.4	2.5	0.0

CIV XI /100,000

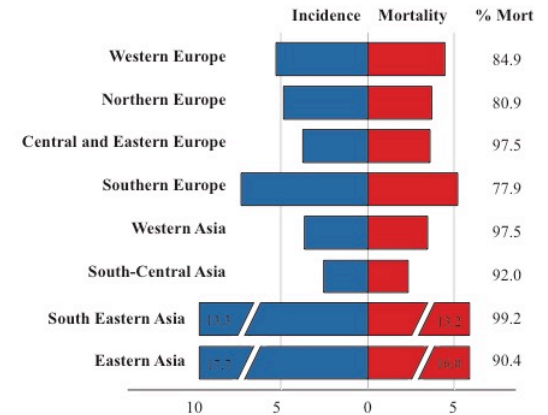
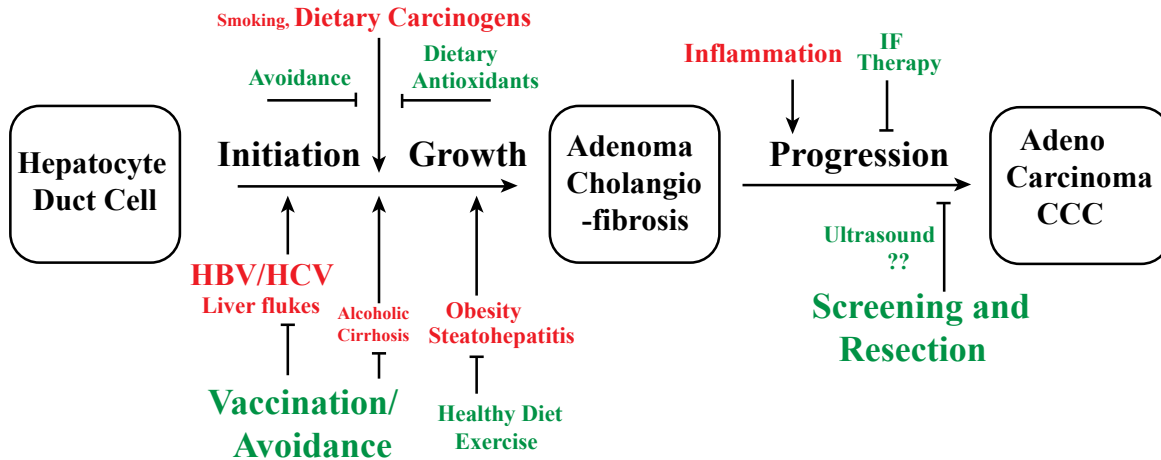
Liver Cancer

Liver, Male



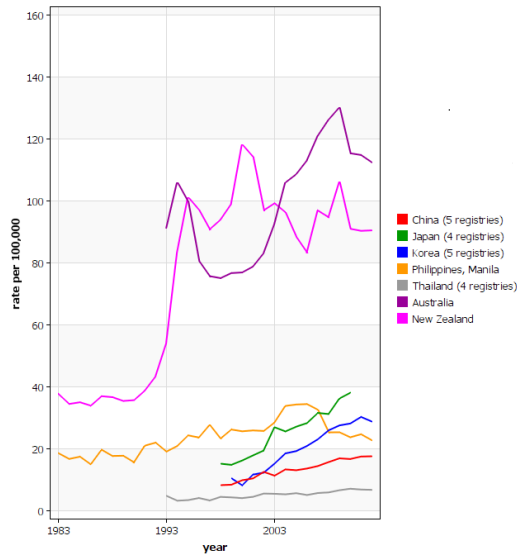
Primary Prevention

Secondary Prevention

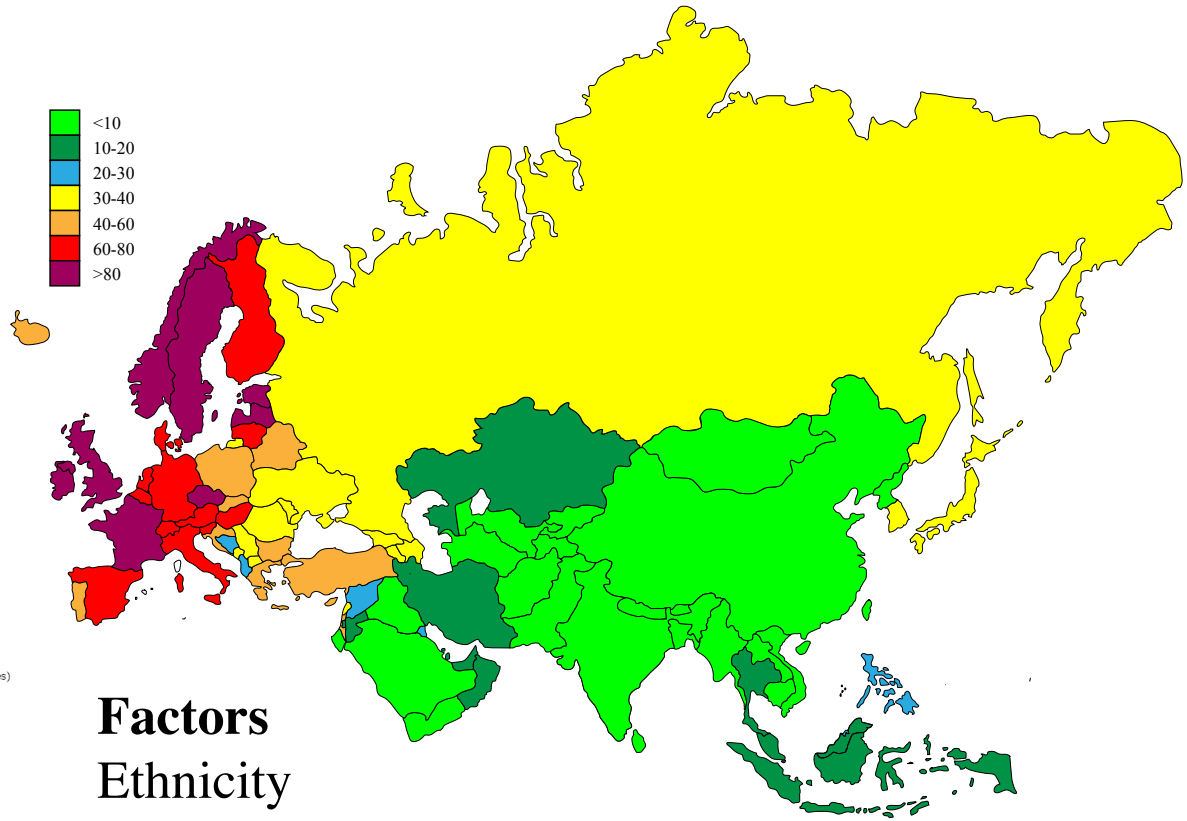


Prostate Cancer

Prostate
Age Standardised Incidence Rate (World), age [0-85+]

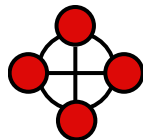
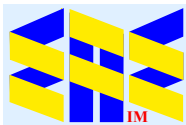
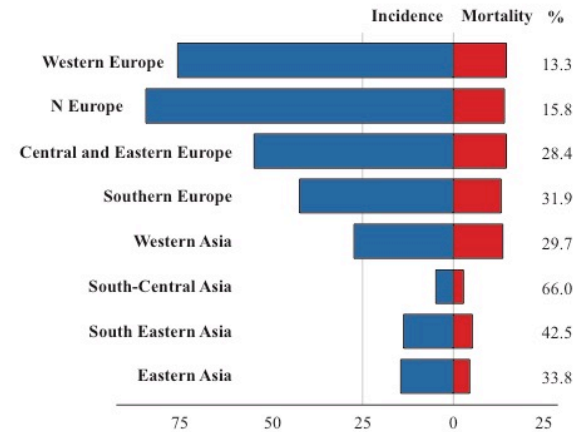


International Agency for Research on Cancer (IARC) - 4.11.2019

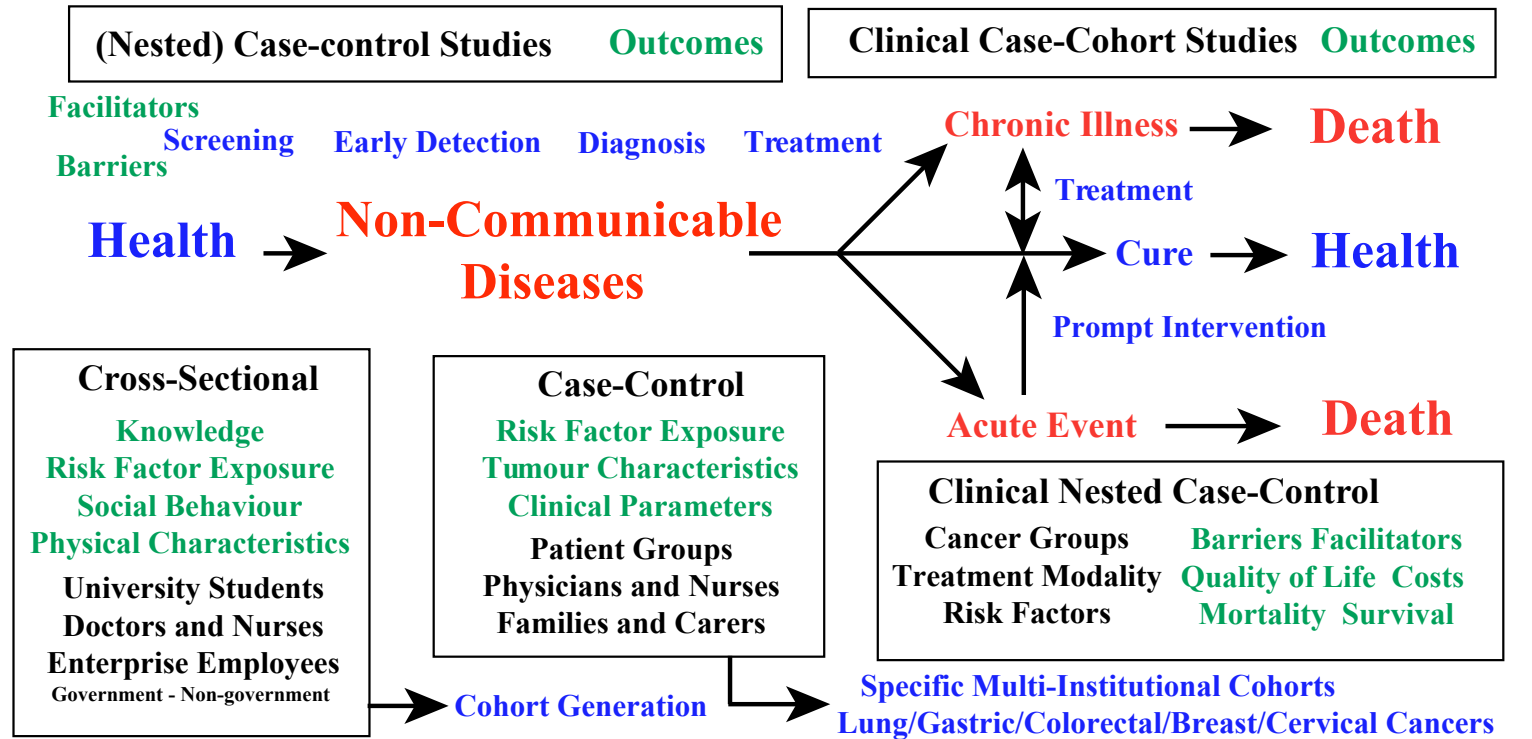


Factors
Ethnicity
Obesity
Dairy Foods
Soy Products

Screening
Free PSA



Multi-Institutional Cooperation to Achieve Rapid Case Accumulation - Registry Control for Standardized Methodology



Research Projects

Beneficial Actions ; Parameters for Investigation; Target Populations; Adverse Outcomes

Questionnaire Items and Measurements

- Demographic characteristics (age, sex, marital status, education etc.)
- Personal and family medical history (including cancer and other chronic diseases)
- History of preventive medicine (awareness, knowledge, cancer screening and vaccination)
- Dietary, smoking and alcohol drinking habits (exposure level, time period)
- Physical activity, occupational history (exposure)
- Environmental exposure to pesticides and electromagnetic fields (exposure level)
- Reproductive history for women (menarche, menopause, oral contraceptive use, pregnancy)

Cohort Items for Outcome Dependence

- Personal characteristics
 - Age, Gender Height, Weight* (BMI*)
 - Occupation, Residence [at birth, now]
 - Lifestyle [smoking, alcohol consumption, diet, exercise]
 - Reproductive History [menarche, menopause, parity, breast feeding]
- Medical History [personal, familial - hypertension, diabetes, cardiovascular]
- Screening and intervention history
- Tumour characteristics [location/histopathology/molecular subtypes]
- Treatment [surgery, chemotherapy, radiotherapy, molecular therapy]
- Outcome [survival, 1 year/5 years; QoL]

Thank you