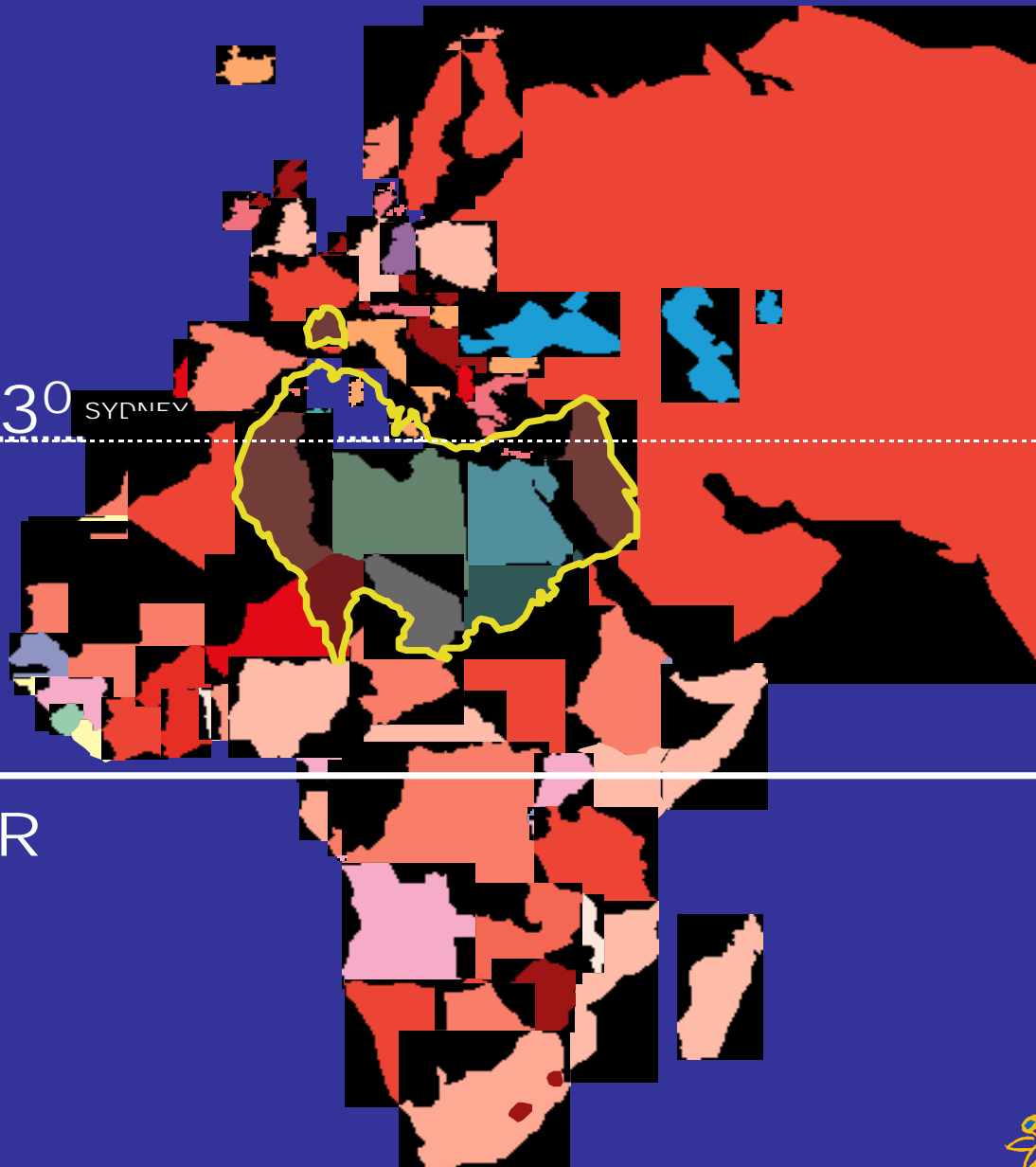


Globalization of Cancer and the Challenge of Improving Cancer Cure and Care in Developing Countries

Robert Burton
Monash University

EQUATOR

33° SYDNEY



PACT

OUR GOAL:



Placing cancer on
the global health agenda

Using radiotherapy as an anchor
to build self-sustaining national
cancer control programmes in
developing countries



pact@iaea.org

A New Platform

- To join forces with other partners
- To fight cancer comprehensively
- To have an effective, efficient and well coordinated IAEA cancer programme that is aligned with the work of WHO in this area
- To mobilize new resources

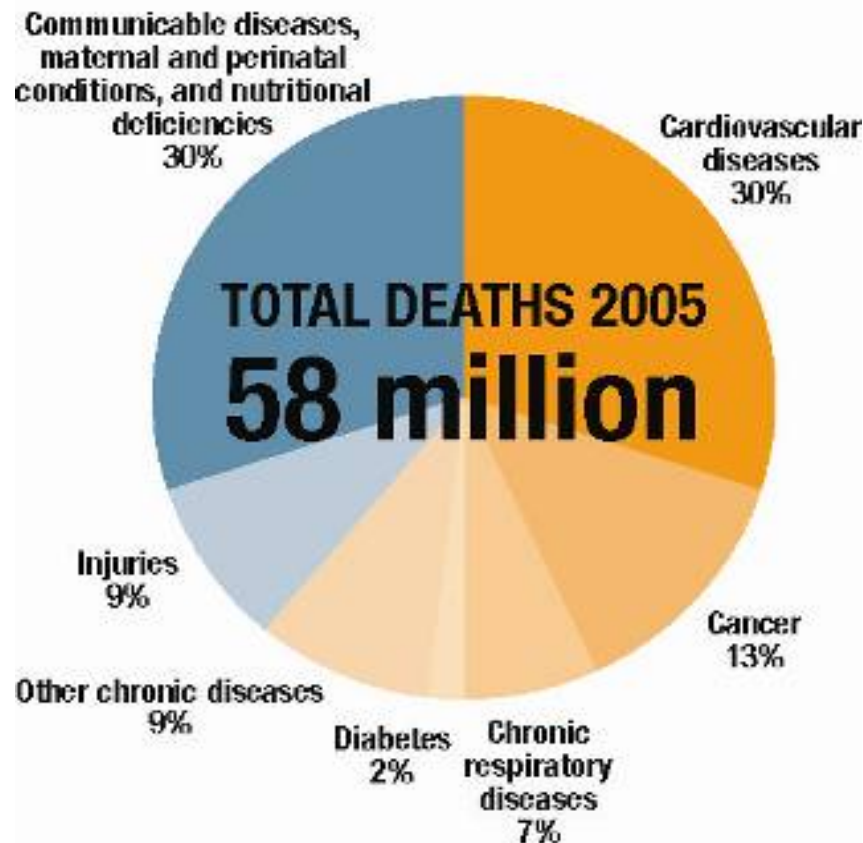


The Global Epidemic of Chronic Non-communicable Diseases (NCD): NCD Burden, Longevity, Risks and Cancer

**IAEA-PACT and Cancer Care and Cure:
Advocacy and Assistance across the
Spectrum of Cancer Control
for Developing Countries**

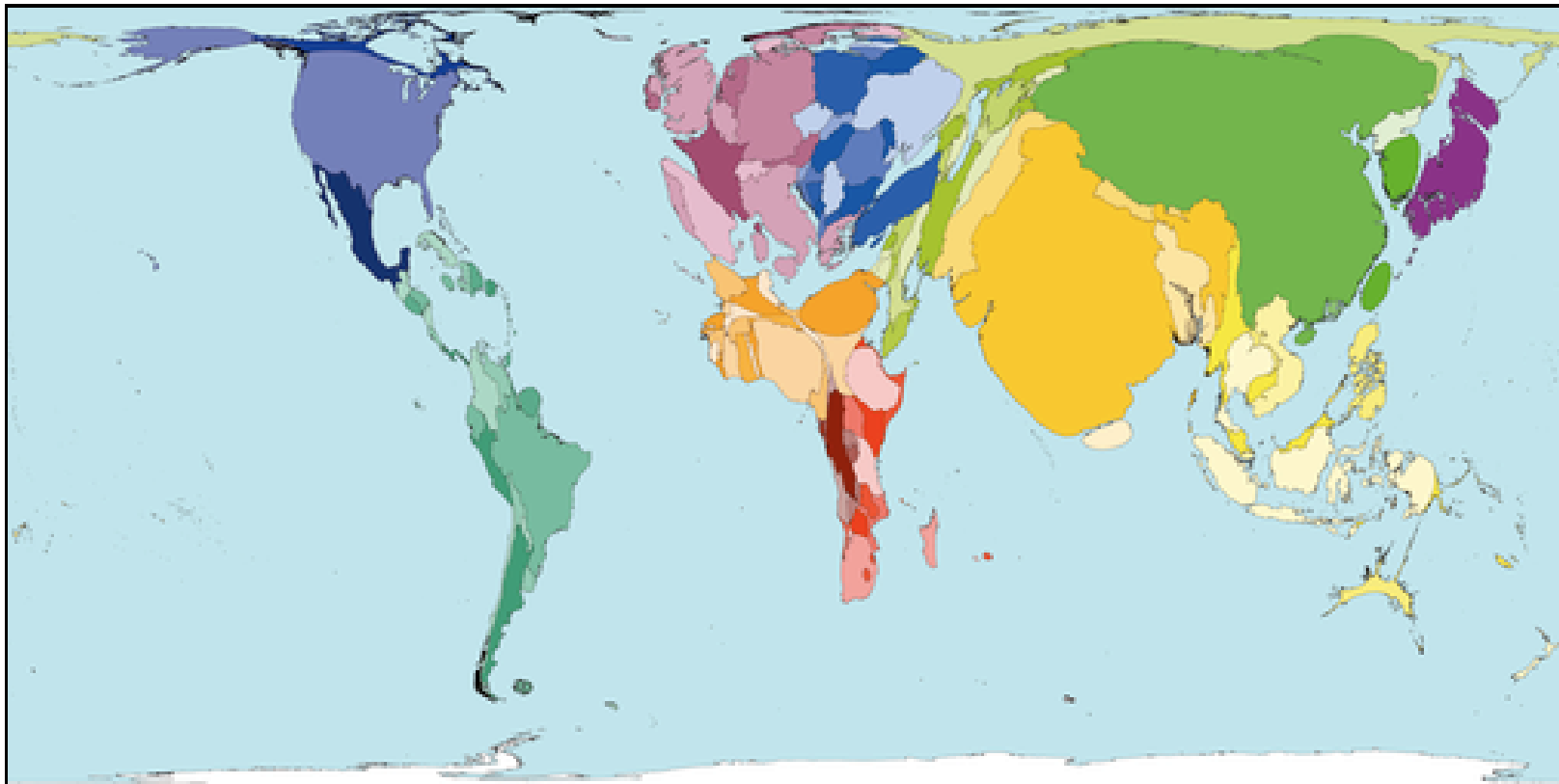
Chronic Non-communicable Diseases-NCD

Projected main causes of death, worldwide, all ages, 2005



- ✓ Cardiovascular disease, mainly heart disease and stroke
- ✓ Cancer
- ✓ Chronic respiratory diseases
- ✓ Diabetes

Deaths from Non-Communicable Illnesses



Territories are sized in proportion to the absolute number of people who died from all chronic disease in one year.

Main NCD and their Causes

BEHAVIORAL

- Tobacco
- Diet
- Physical Activity
- Alcohol

ENVIRONMENTAL

- Socio-cultural
- Policy
- Economic
- Physical

NON-MODIFIABLE

- Age, Sex, Genes

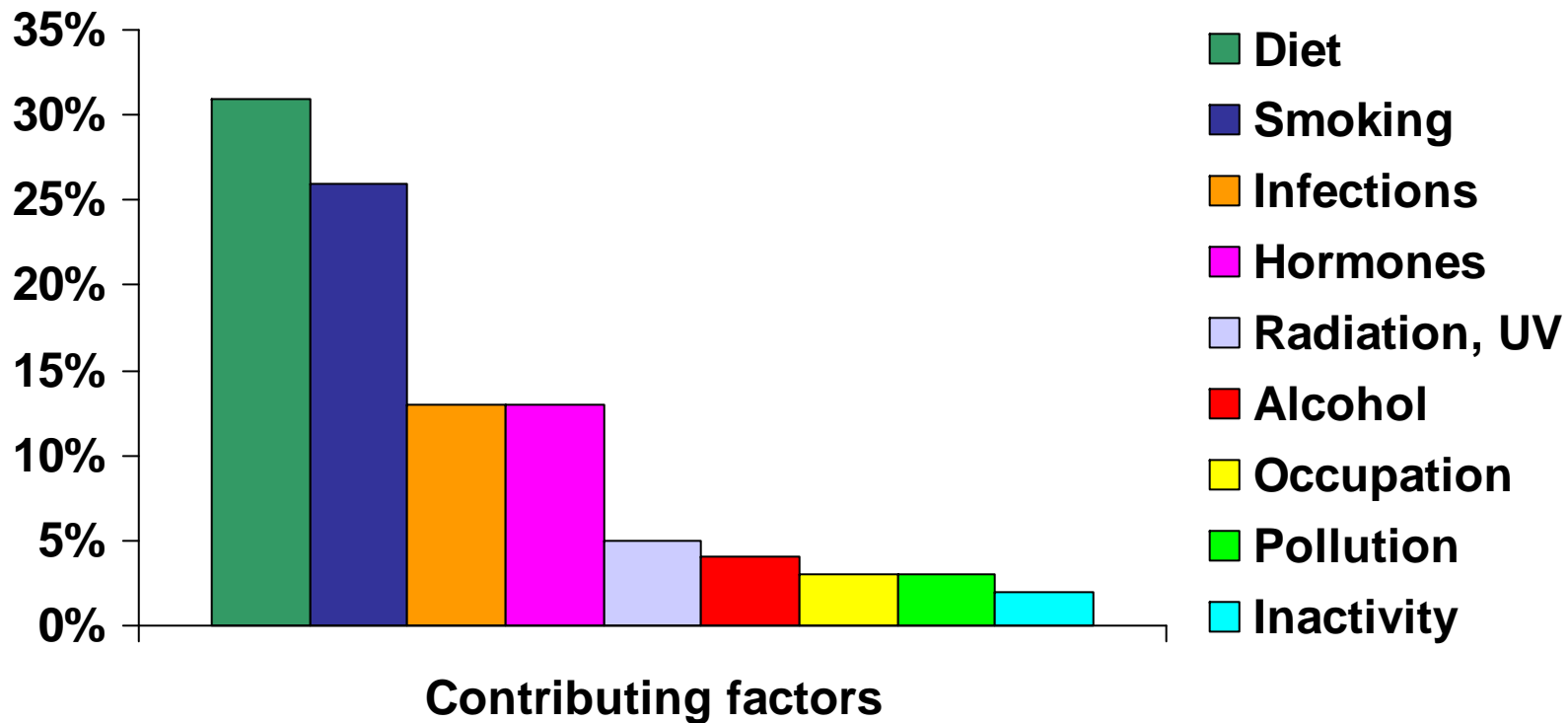
INTERMEDIATE RISK FACTORS

- Hypertension
- Blood lipids
- Obesity
- Precancers

END-POINTS

- Ischemic Heart Dis.
- Stroke
- Cancer
- Chronic Lung Dis.
- Diabetes

Major contributions to cancer



REVIEW of the KEY CANCER FACTS

2000

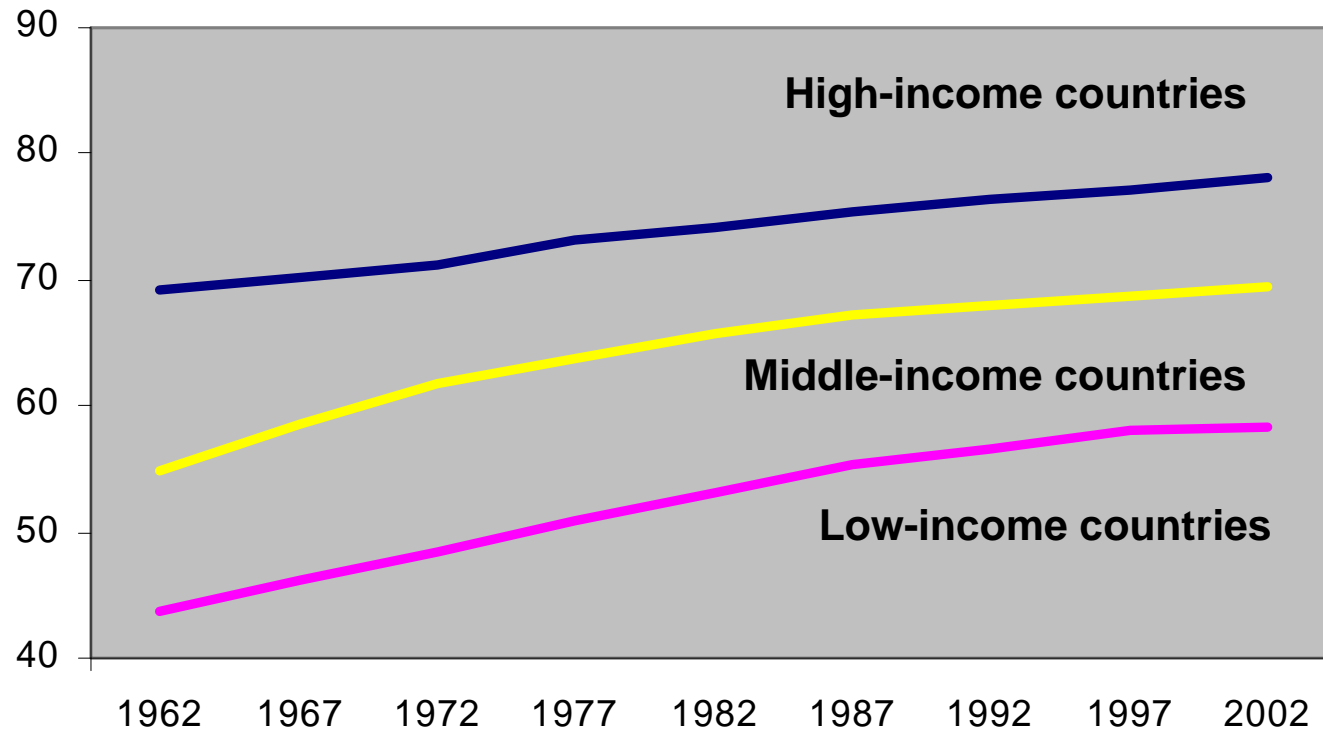
- 6 million deaths
- 10 million new cases
- 22 million living with cancer

2020

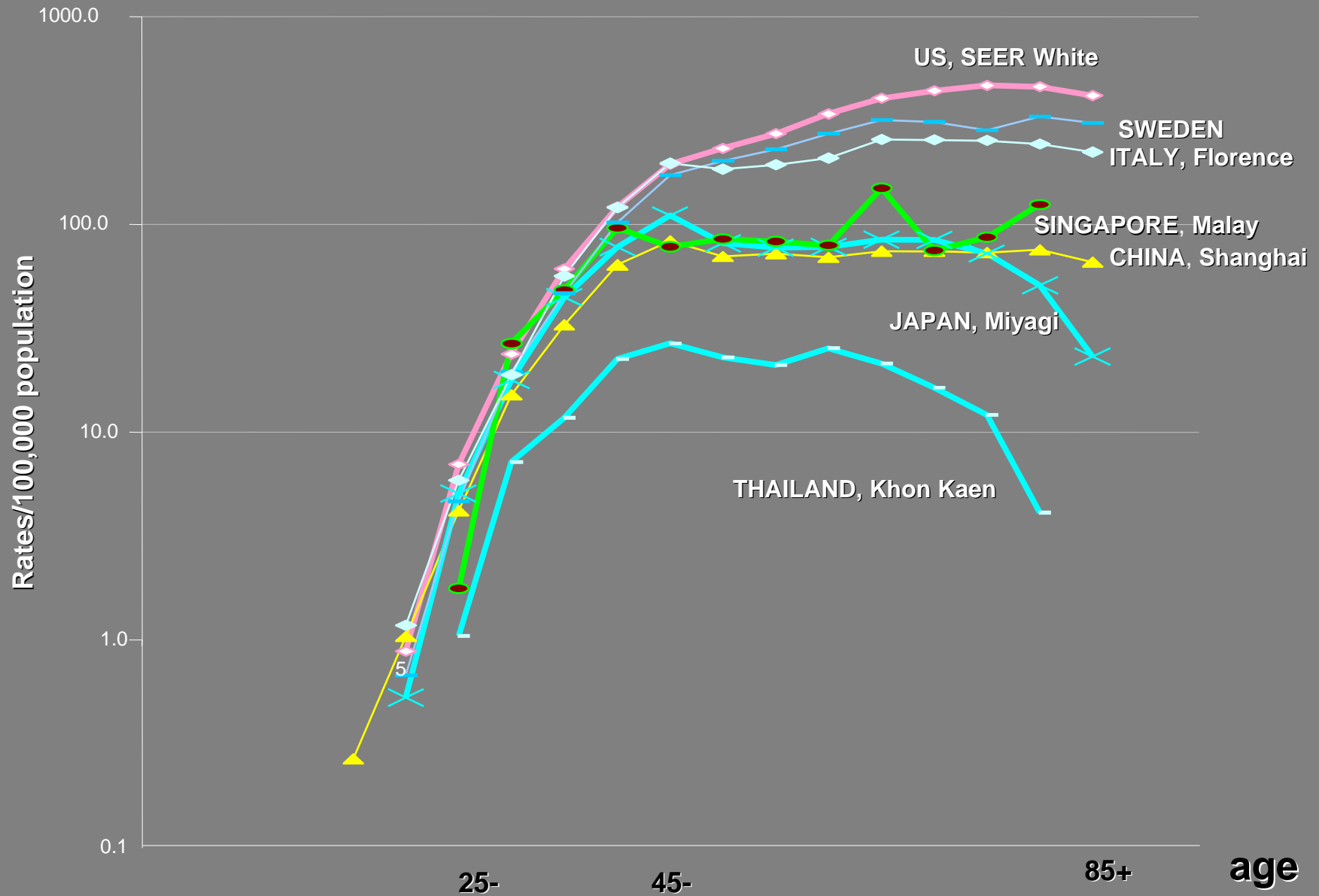
- 10 million deaths
- 16 million new cases (2/3 in developing countries)
- 30 million living with cancer

Life Expectancy in the 20th Century...

Life Expectancy (years)



Breast Cancer Incidence by age -1990 (CI5)



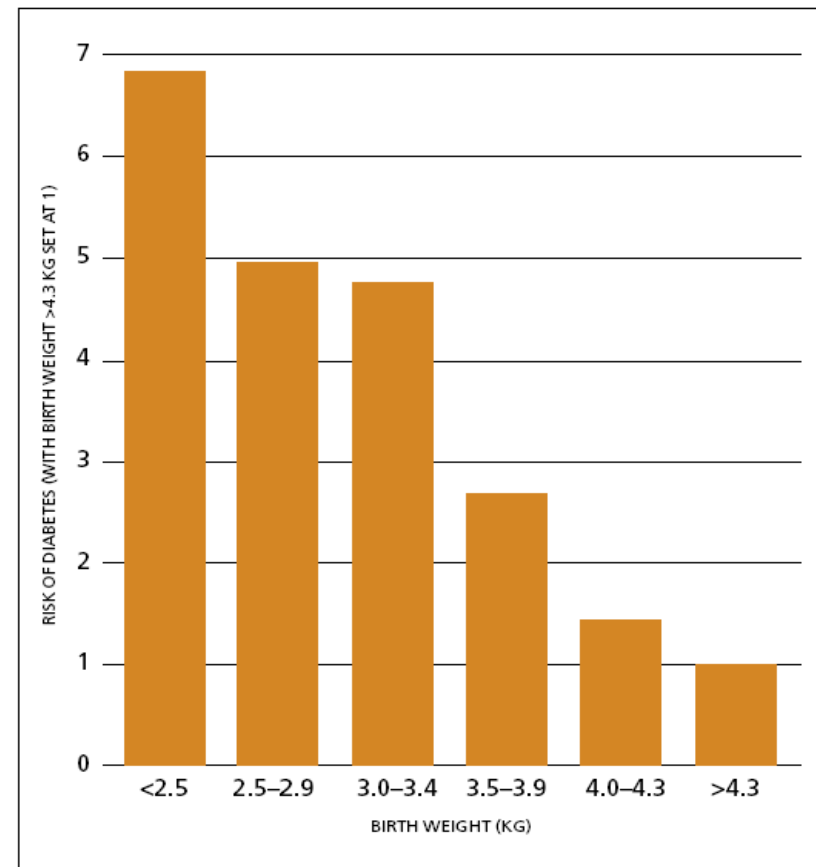
Social Determinants of Health

- **EARLY LIFE:**

Effects of early development last a lifetime. Nutritional deficiencies during pregnancy and poor fetal development is a risk for poor health later in life. A good start means supporting mothers & children.

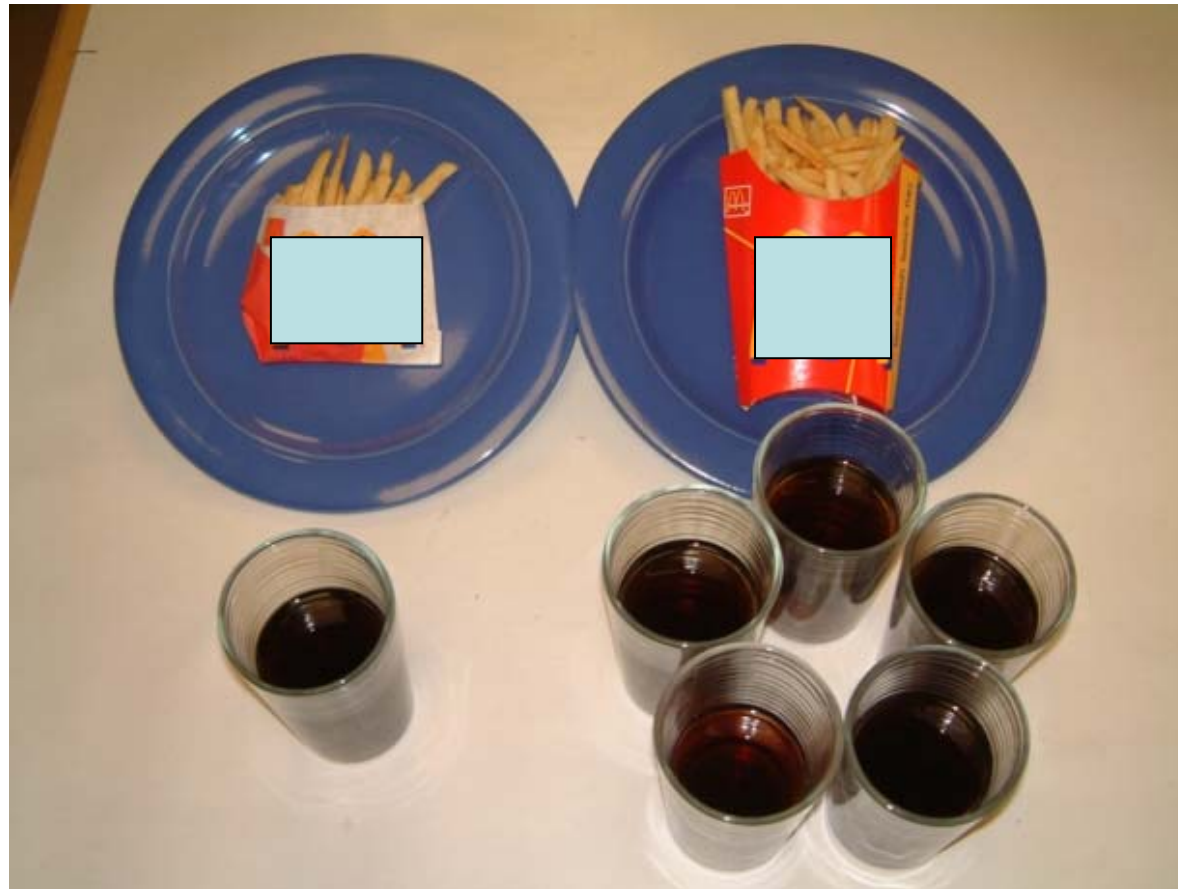
Fig. 2. Risk of diabetes in men aged 64 years by birth weight

Adjusted for body mass index



Changing Diets: More Westernised, larger Portions, more Energy-Dense

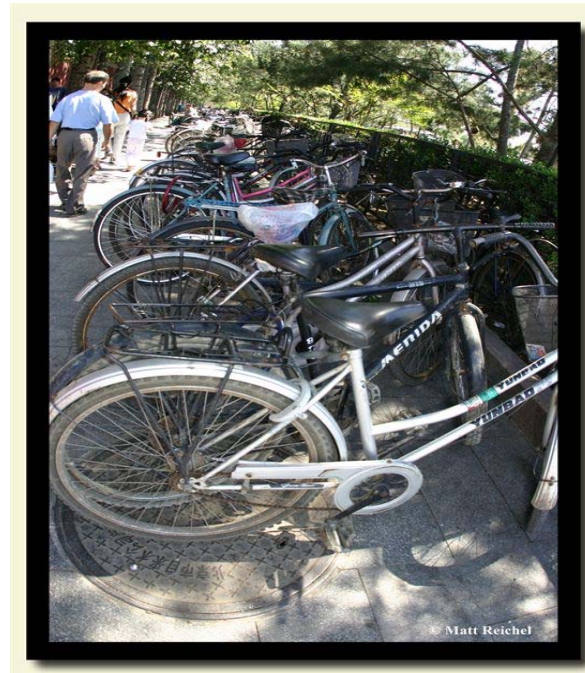
1955
Fries 72g
Coke 200ml



2001
Fries 205g
Coke 950ml

Standard serves 1955 and 2001

Source: Swinburn B, "Influencing Environments to Reduce Obesity Prevalence" 2002



Overweight – Obesity & Cancer USA 2003

Body Mass Index ≥ 25

Attributable Cancer Mortality

Women 25%

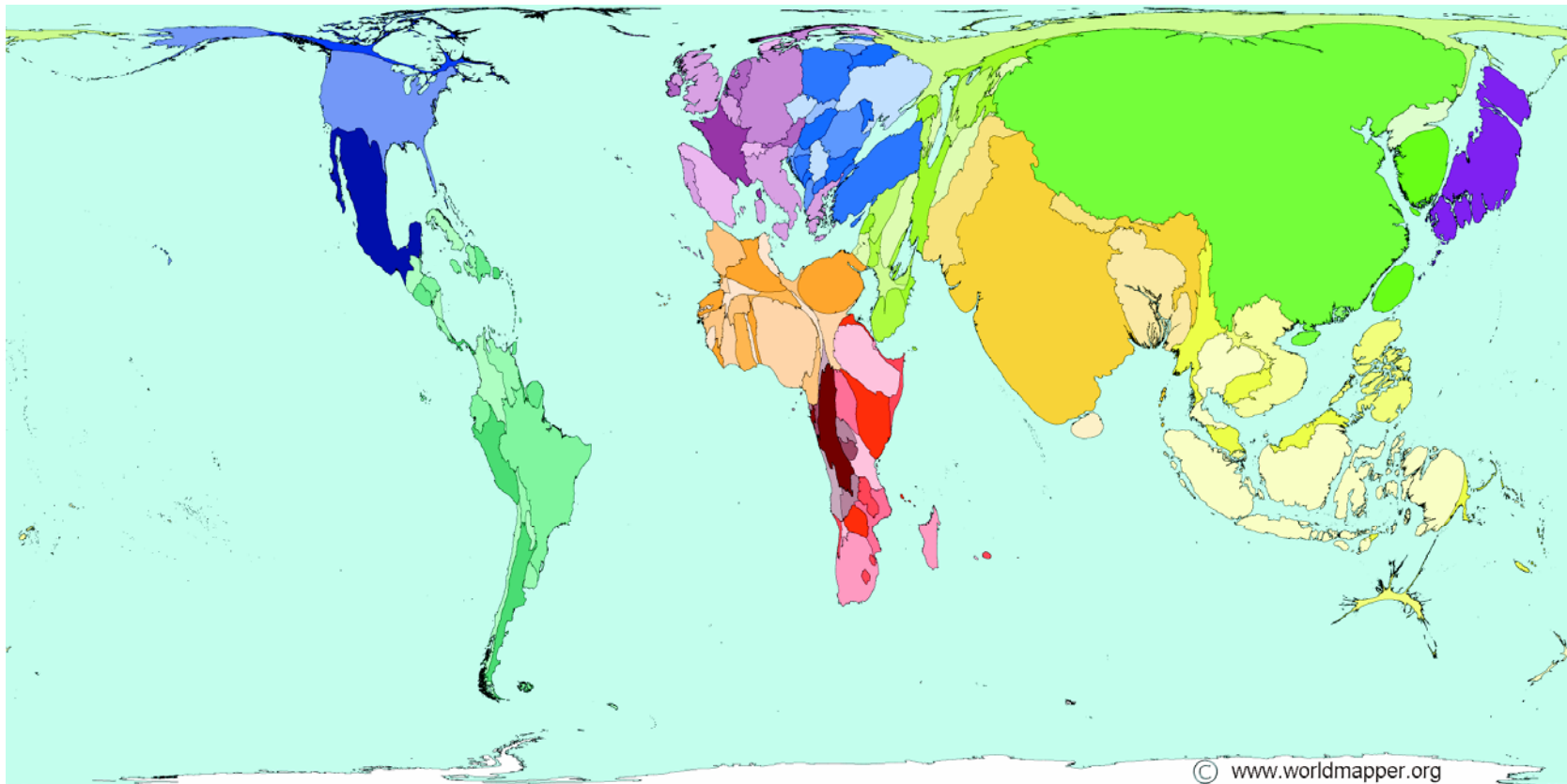
Men 14%

Calle et al NEJM 2003; 348: 1625

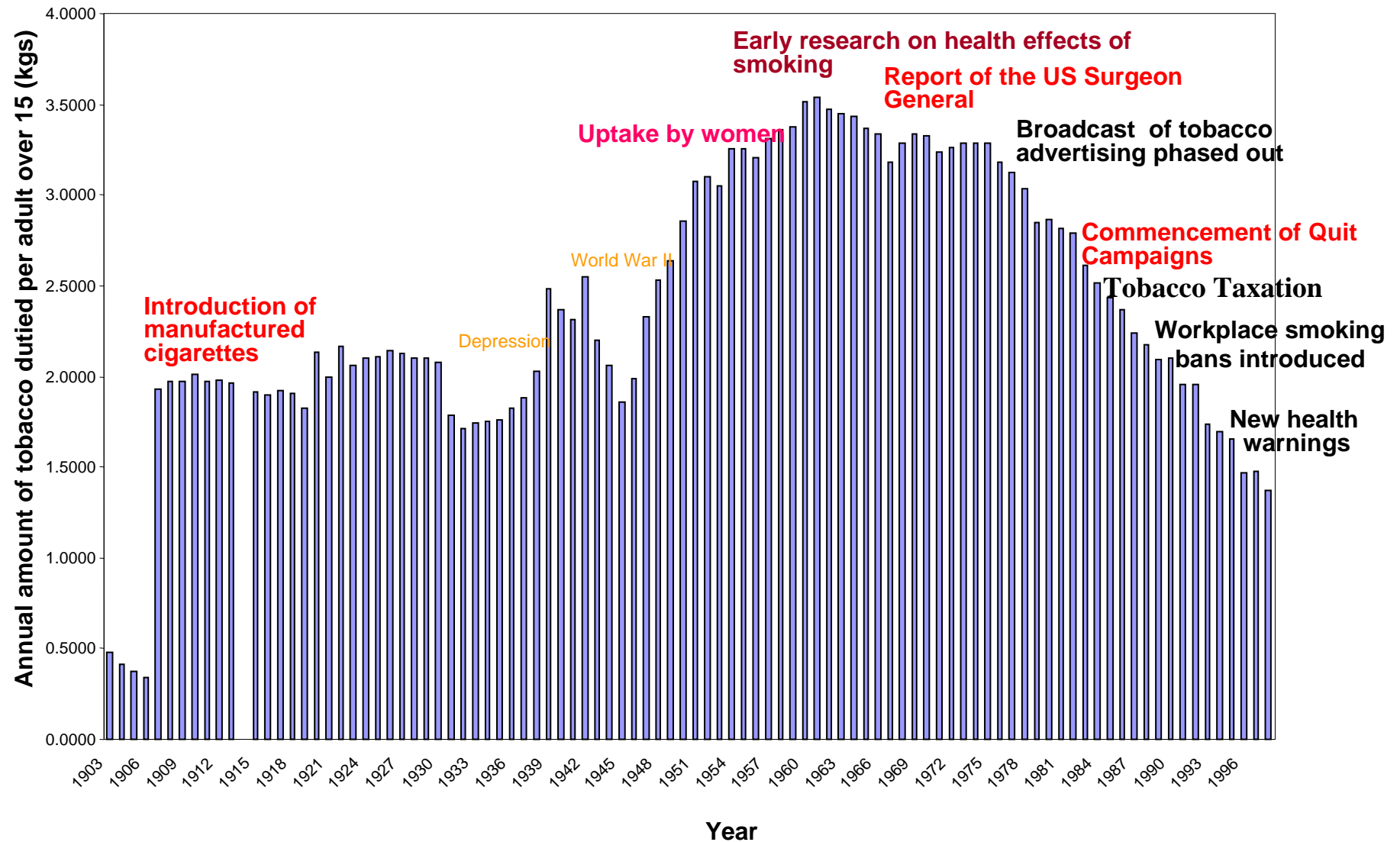
ACS Cohort 900,000 adults, 16 year results

Men smoking

Territories are sized in proportion to the number of men smoking cigarettes in 2005

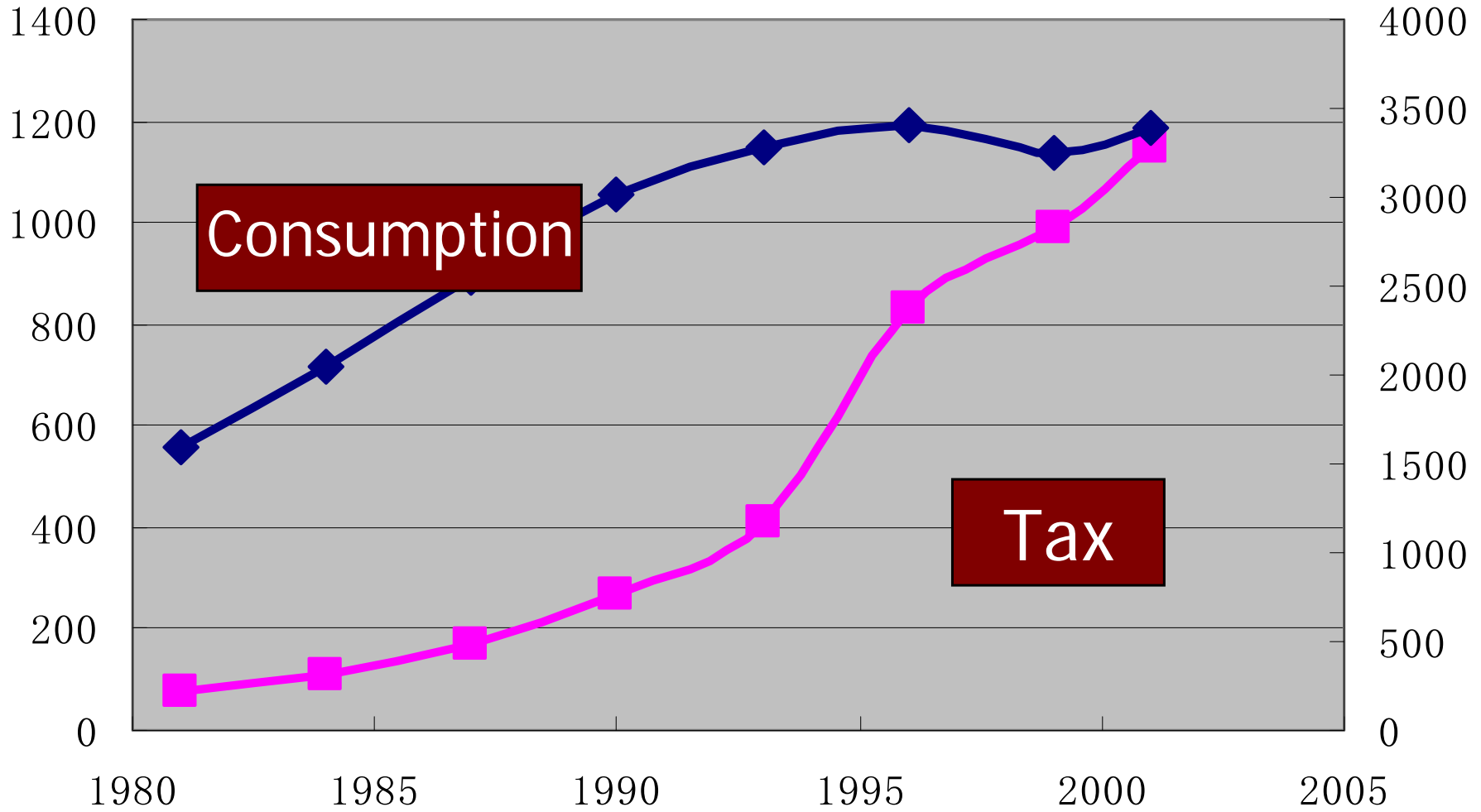


Adult per capita consumption of tobacco products in the 20th Century in Australia



Tax:: units of 100 million Yuan

Consumption: units
of 100 thousand
packs



IMMUNISATION AGAINST CANCER

Cancer	Cause	Vaccine	When
Hepatoma	HBV	Yes	1980
Cervix	HPV	Yes	2007
Stomach	Helicobacter Pylori	In development	?
Nasal cancer and lymphoma	EBV	In development	?

PREVENTABILITY OF GLOBAL CANCERS-2000*

CANCER	NEW CASES Millions	PREVENTABLE %	FACTOR
LUNG	1.3	85	tobacco
STOMACH	1.0	90	H.pylori / diet
BREAST	1.0	10	screening/ diet/ exercise
COLORECTAL	0.9	60	diet / exercise/ screening
HEAD AND NECK	0.6	75	tobacco/ alcohol /screening
CERVIX	0.5	90	HPV/ screening
LIVER	0.5	75	HBV / HCV / alcohol
OESOPHAGUS	0.5	75	tobacco / diet
URINARY TRACT	0.5	30	tobacco
OTHER	4.3	10	
TOTAL	10.1	50	

* Skin Cancers excluded

Integrated System for Comprehensive Cancer Control

Maximize the Impact of Interventions including
Radiotherapy through Balanced Investments across the System

Prevention
Controlling Cancer
Risk Factors

Early Detection
Early Diagnosis
and Screening

Diagnosis & Treatment
Follow-up
and Rehabilitation

*(Pathology, Radiology and
Nuclear Medicine, Radiotherapy,
Chemotherapy, Surgery, Other)*

Palliative Care
Symptom control & management
(Opiates and Radiotherapy)

Psychosocial and spiritual support

Bereavement support
for families and caregivers

PREVENT

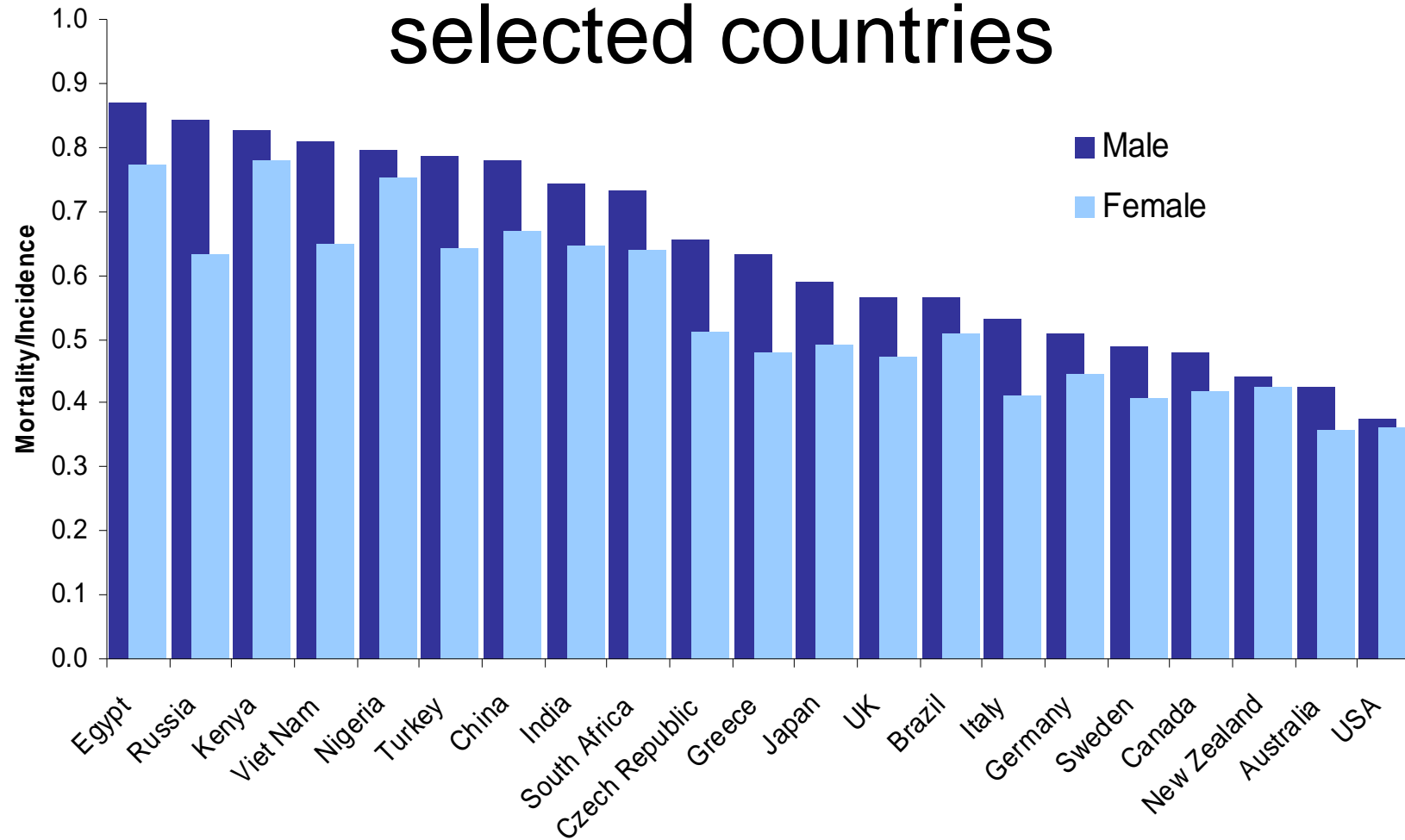
DETECT EARLY

TREAT & CURE

CARE

All Cancer

Mortality/Incidence ratios, 2002 for selected countries



J. Ferlay, F. Bray, P. Pisani and D.M. Parkin. GLOBOCAN 2002. Cancer Incidence, Mortality and Prevalence Worldwide. IARC CancerBase No. 5, version 2.0. IARC Press, Lyon, 2004.

IAEA-PACT and CANCER CONTROL

**PRIMARY PREVENTION AND
DIAGNOSIS OF PRECANCERS with
CURATIVE TREATMENT can REDUCE
CANCER INCIDENCE which then
REDUCES CANCER MORTALITY**

LITTLE or NO IMPACT BEFORE 2020

**BUT AN ESSENTIAL LONG TERM INVESTMENT
IN CANCER CONTROL**

IAEA-PACT and RADIOTHERAPY

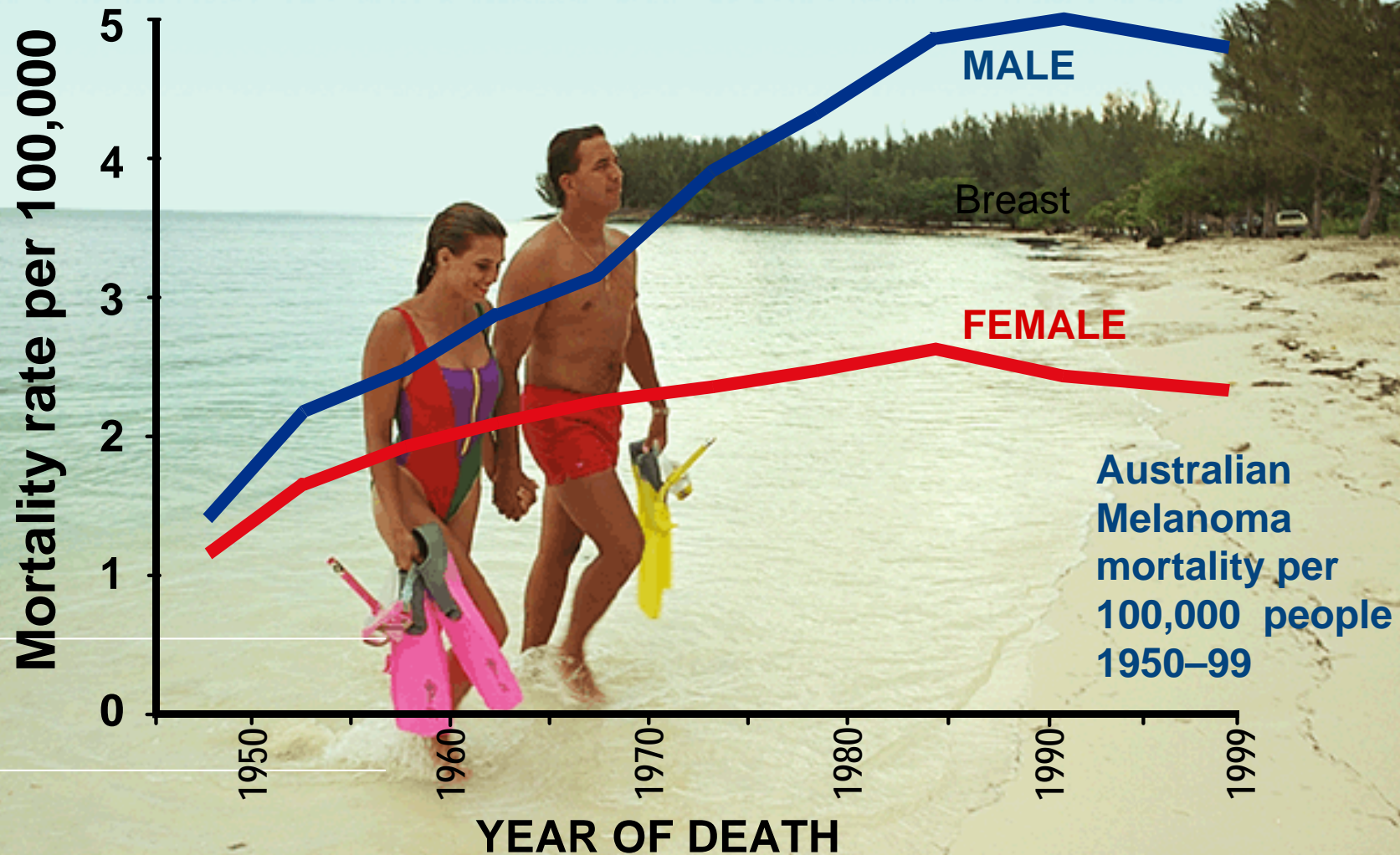
MOST CANCER TREATMENT IS PALLIATIVE

THIS WILL **NOT CHANGE by 2020**

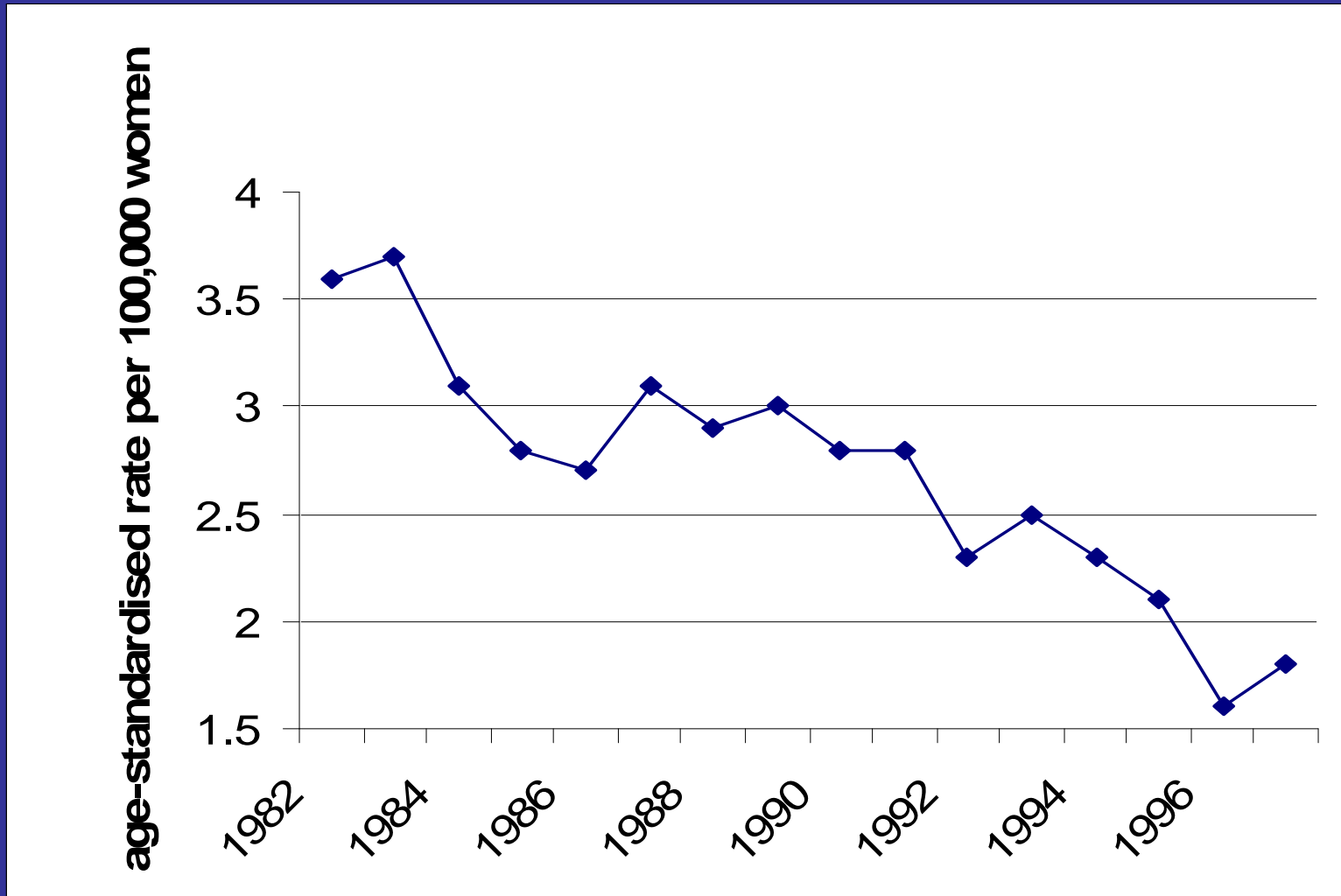
UNLESS

The **Challenge of Late Diagnosis
is MET with
STRATEGIES for EARLY DIAGNOSIS**

early detection = cure



Cervical cancer mortality rate 1982~1996



IARC's CERVICAL CANCER SCREENING PROGRAMME

STUDY LOCATIONS



HOW EFFECTIVE ARE THE TREATMENT OF PRECANCERS IN THE DEVELOPING WORLD?

Cryotherapy: Data from Indian studies

Lesion	Total	Cured at 1 year
CIN 1	1264	90% (N=1137)
CIN 2 & 3	234	79% (N=184)

LEEP: Data from Indian studies

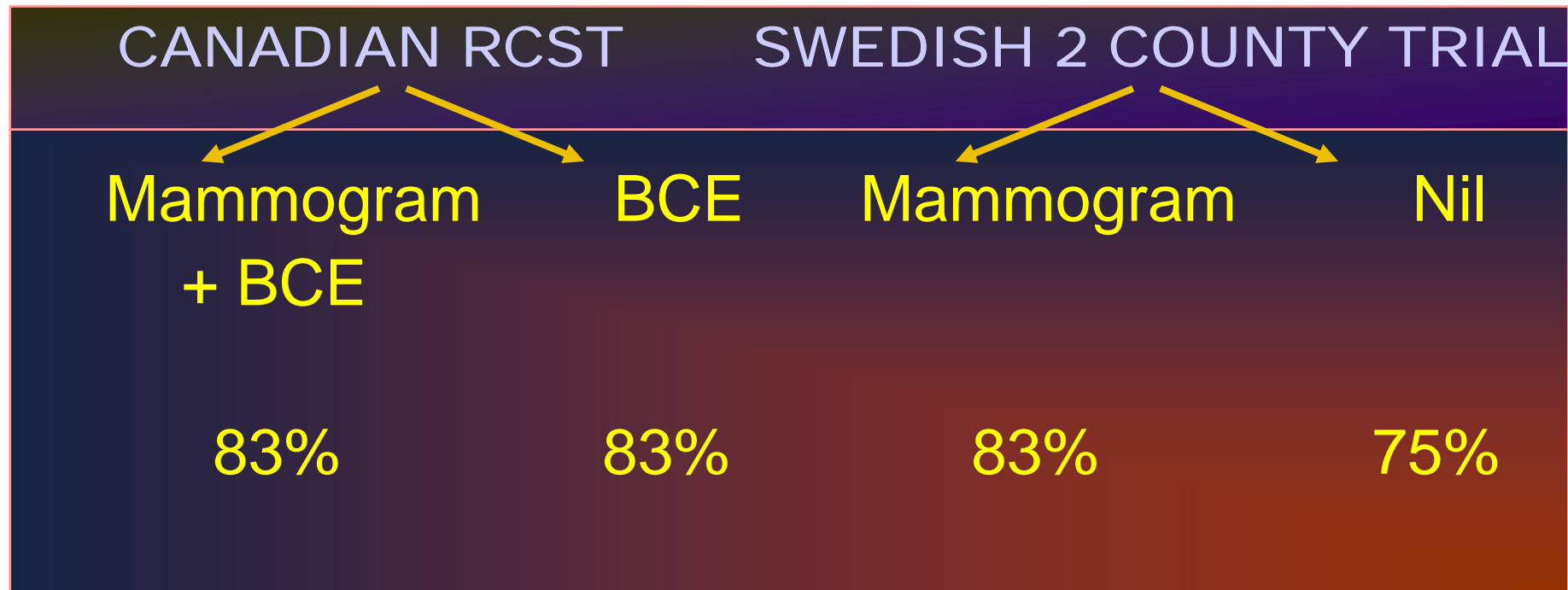
Lesion	Total	Cured at 1 year
CIN 1	296	96% (N=283)
CIN 2 & 3	336	86% (N=288)

Overall 1 cure rate in CIN = 89% (1892/2130)

*Supported by the ACCP through the Bill & Melinda
Gates Foundation*

SCREENING MAMMOGRAPHY & MORTALITY FROM BREAST CANCER

13 YEAR SURVIVAL ages 50–69



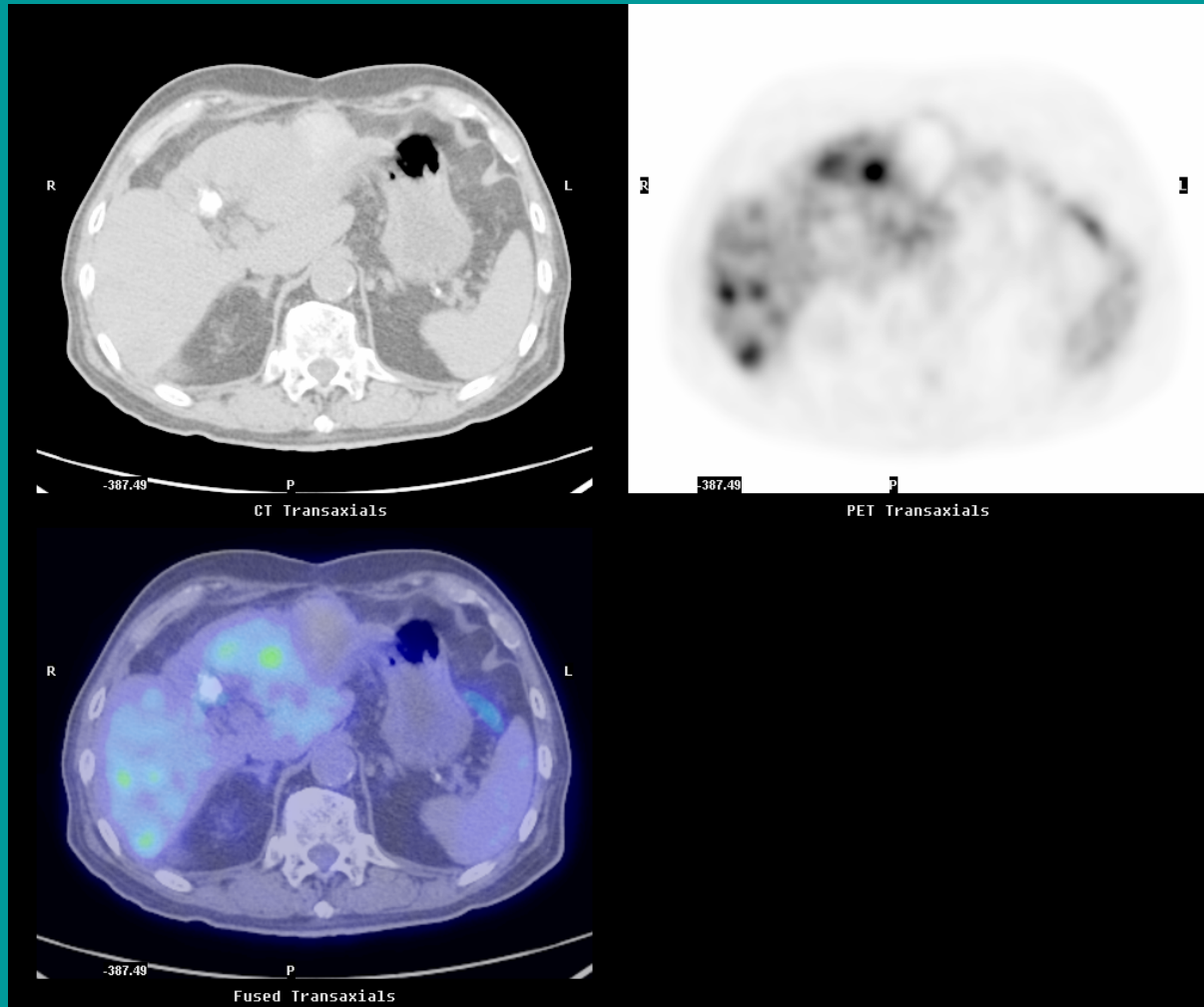
CONCLUSION: BREAST CLINICAL EXAM may be as good as MAMMOGRAPHY FOR SCREENING FOR BREAST CANCER



PET/CT in Oncology

Hepatocellular Carcinoma

- Previous treatment with surgery, RF ablation and chemo-embolization
- Restaging for rising AFP levels



ACCESS TO RADIOTHERAPY

pact@iaea.org



Radiotherapy is an essential part of the treatment of cancer

Over 30 African and Asian countries have no access to radiotherapy









There is a shortfall of over 5000 radiotherapy machines in the developing world

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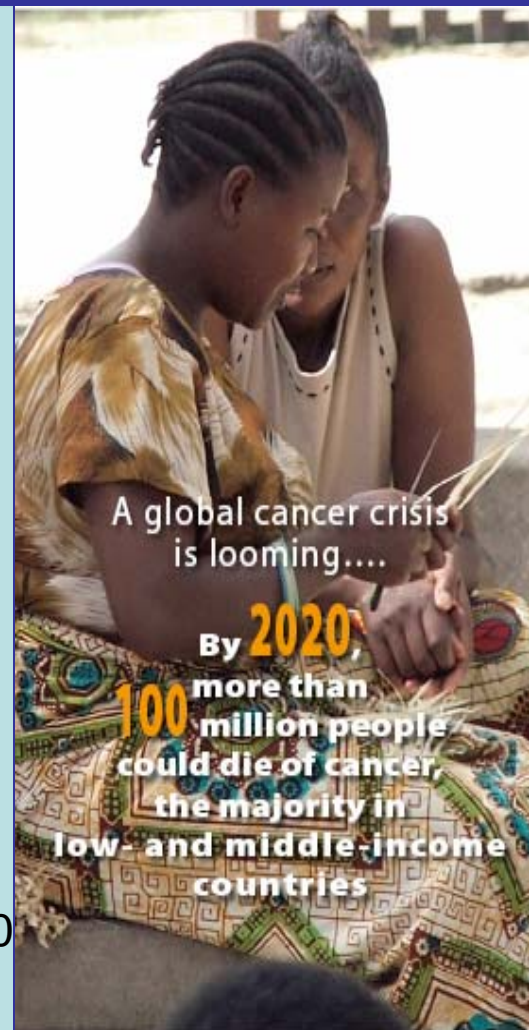
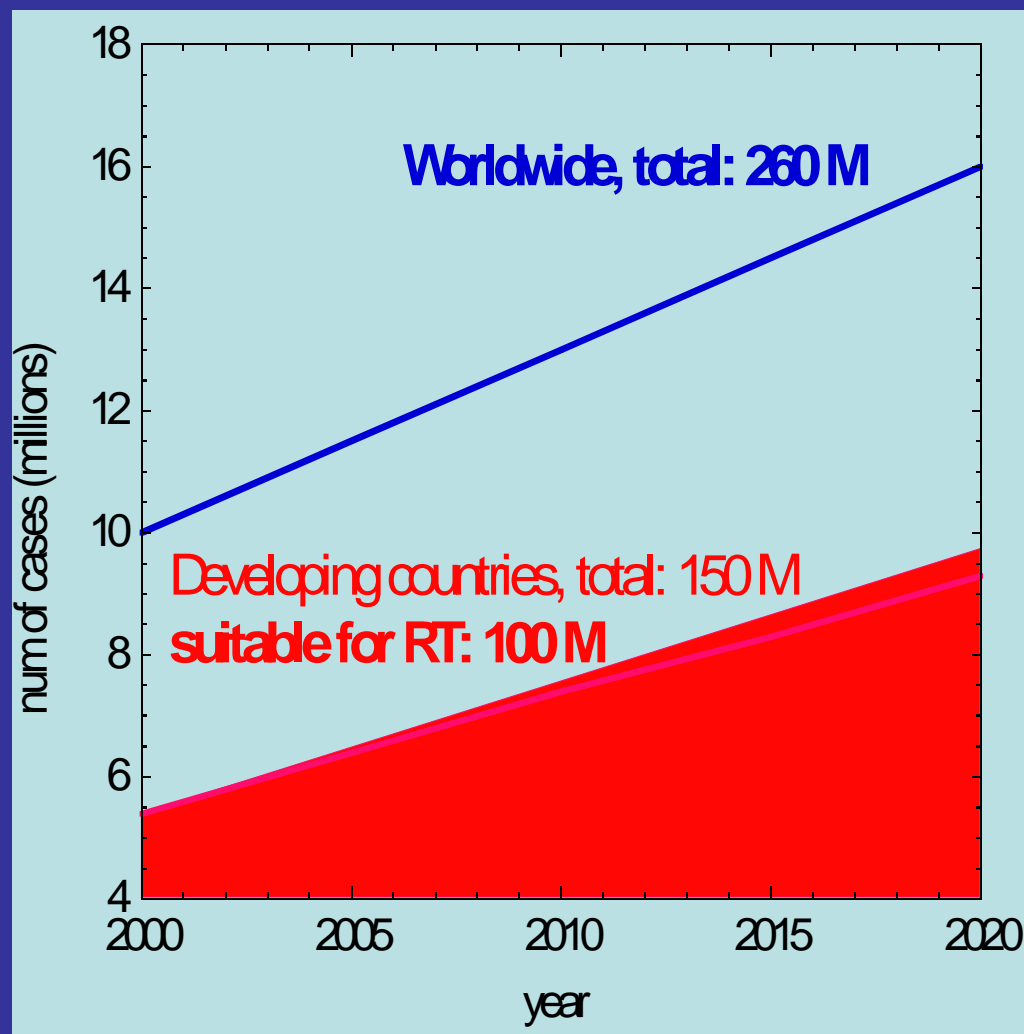
Availability of treatment

Number of people served by a single radiotherapy centre (latest available data 1995-2003)

- | | | | |
|---|-----------------|---|----------------------|
|  | below 500 000 |  | 10-19.9 million |
|  | 500 000-999 999 |  | 20 million and above |
|  | 1-4.9 million |  | no centre |
|  | 5-9.9 million |  | no data |



Need for Radiotherapy: 100 Million Cases in Developing World by 2020



50% in Asia, 30% in L. America, 20% in Africa 31

Cancer Control Knowledge into Action

WHO Guide for Effective Programmes

Planning

<http://www.who.int/cancer/modules/PlanningModule.pdf>

2006



**World Health
Organization**