

The Cancer Problem in Latin-America. From knowledge to practice

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INCTR, Sao Paulo, March 2007

- **"There are only two families in the world, as my grandmother used to say: the haves and the have-nots."**

Sancho Panza in *Don Quixote de la Mancha*

Between and Within: International Perspectives on Cancer and Health Disparities

**Lovell A. Jones, Janice A. Chilton, Richard A. Hajek,
Nicholas K. Iammarino, Larry Laufman**

***Journal of Clinical Oncology*, Vol 24, No 14 (May 10), 2006: pp.
2204-2208**

THE MAGNITUDE OF
THE PROBLEM

Cancer: Magnitude of the problem

- * There has been a sustained increase in the cancer incidence in developing countries in recent years.
- * At the same time, 2/3 of the patients are in the developing world with very limited resources (1/3), while the developed world has 2/3 of the resources and 1/3 of patients.

Cancer: Magnitude of the problem(Cont.)

- **Each year, almost 7 million people die from cancer and close to 11 million new cases are diagnosed.
(UICC data)**

Cancer: Magnitude of the problem(Cont.)

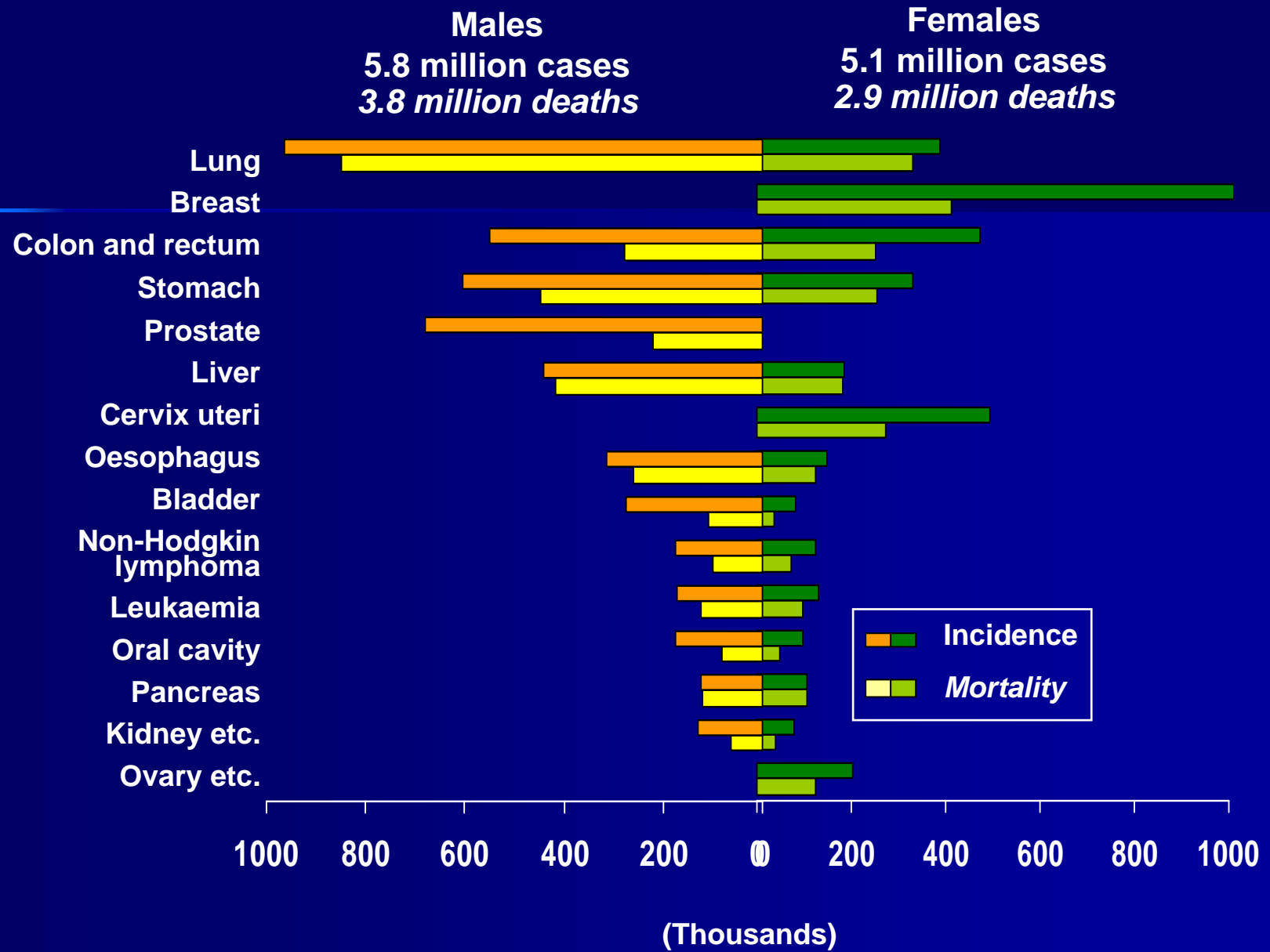
- **Over 70% of the deaths will be in low and middle-income countries, where resources are scarce and survival rates are half of what they are in the US.**
- **Indeed, between 80 and 90 % of cancer patients in developing countries already have incurable cancer at the time of diagnosis.**

(ACS, International Affairs Program and Country Plans 2005-06)

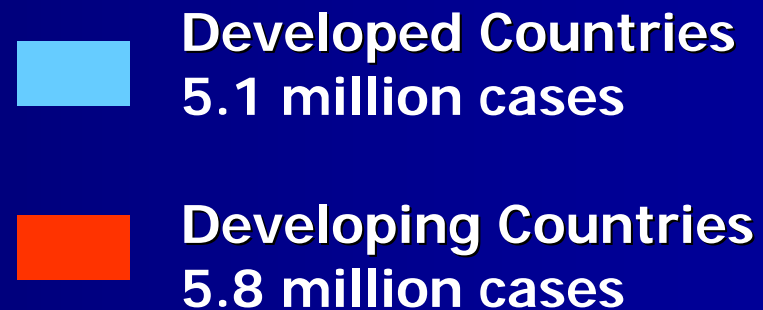
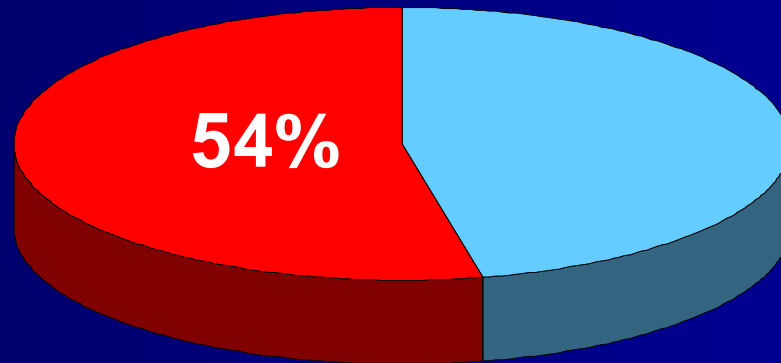
Cancer: Magnitude of the problem(Cont.)

- IN THE US AND MOST DEVELOPED COUNTRIES, CANCER RATES ARE DROPPING AND SURVIVAL RATES ARE RISING.
- ELSEWHERE, THE REVERSE IS TRUE.

NEW CASES & DEATHS, WORLD, 2002

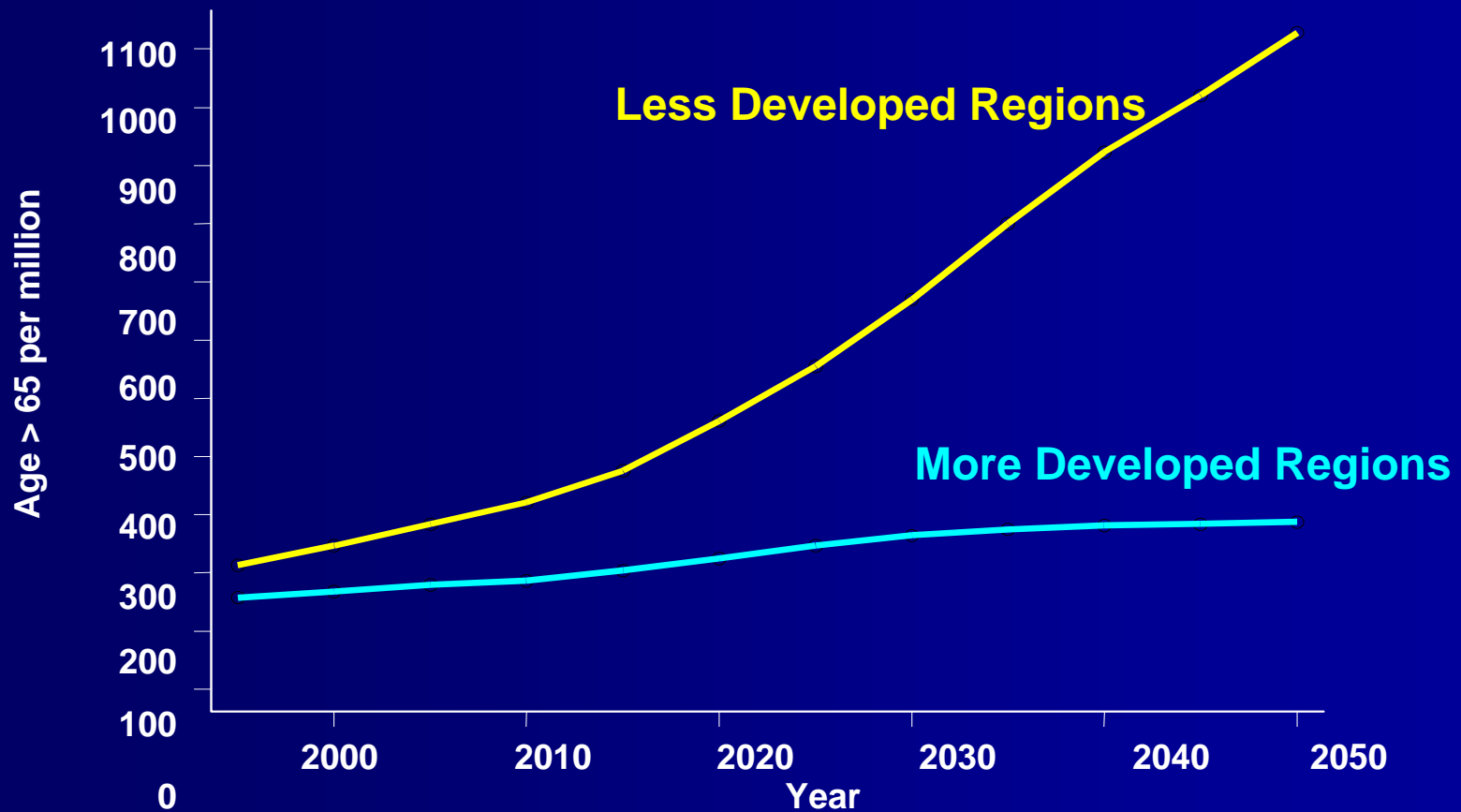


2002: 10.9 million new cases

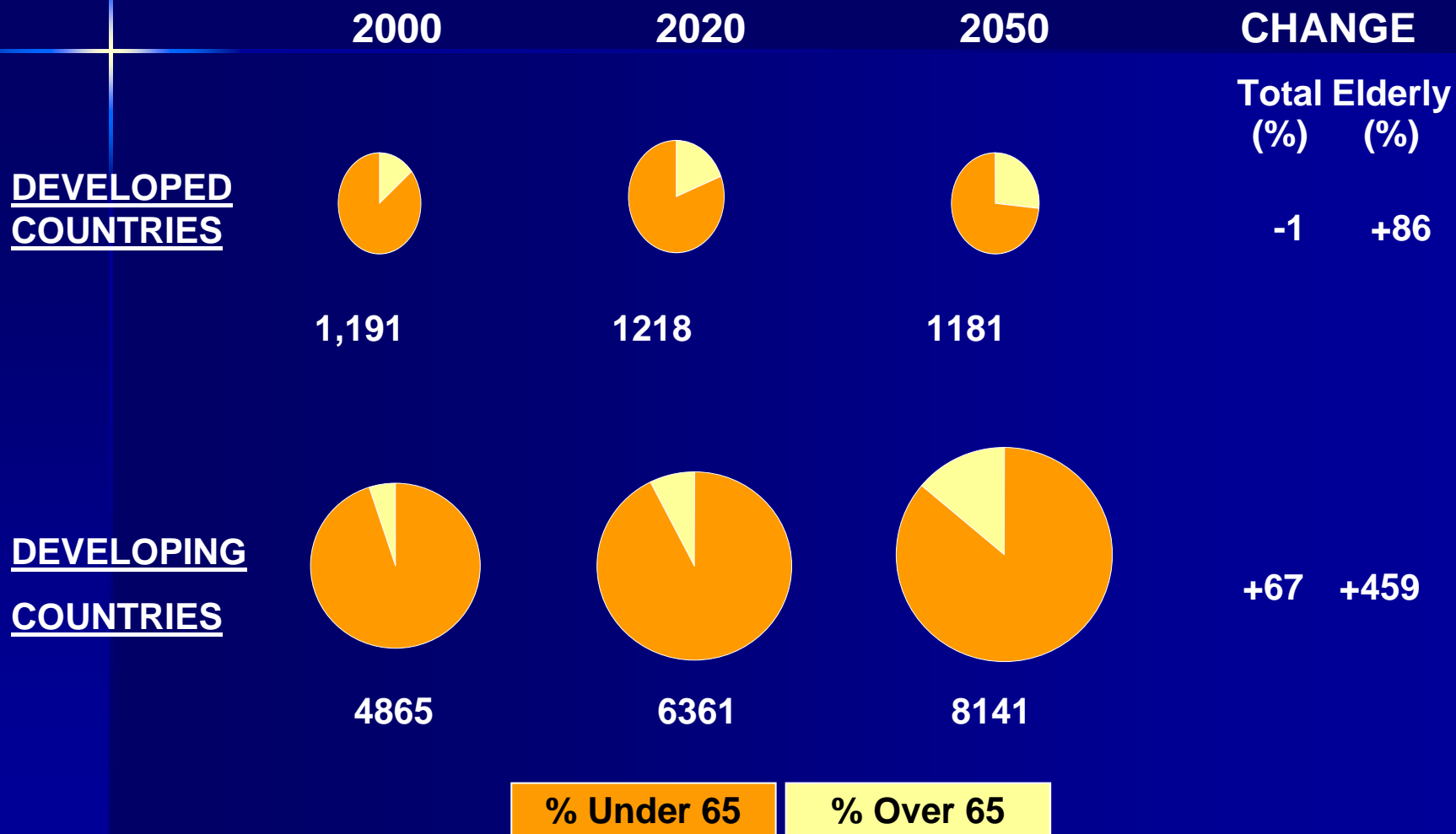


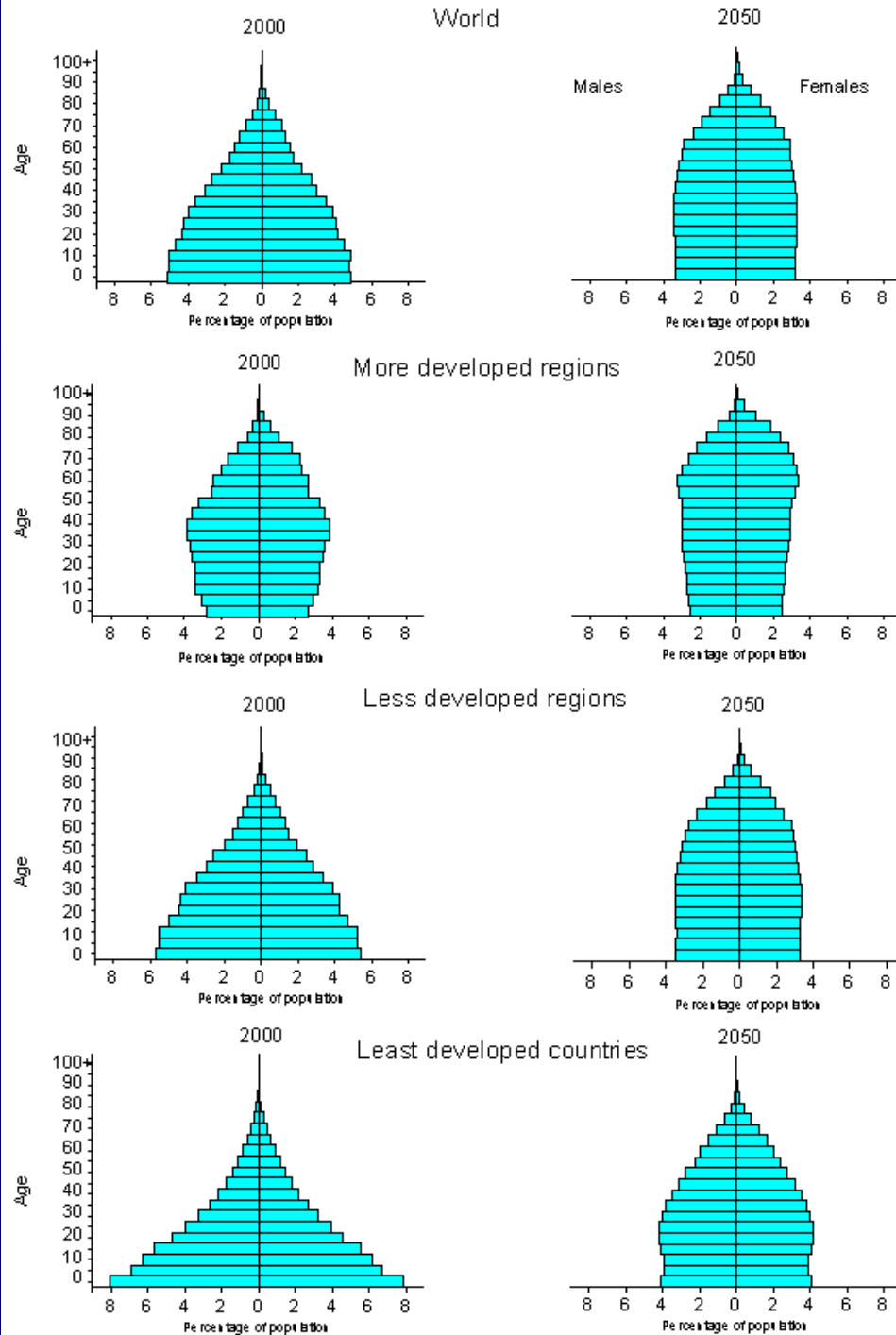
Aging of the world populations

Projected number of persons aged 65 or over in more and less developed regions 2000-2050

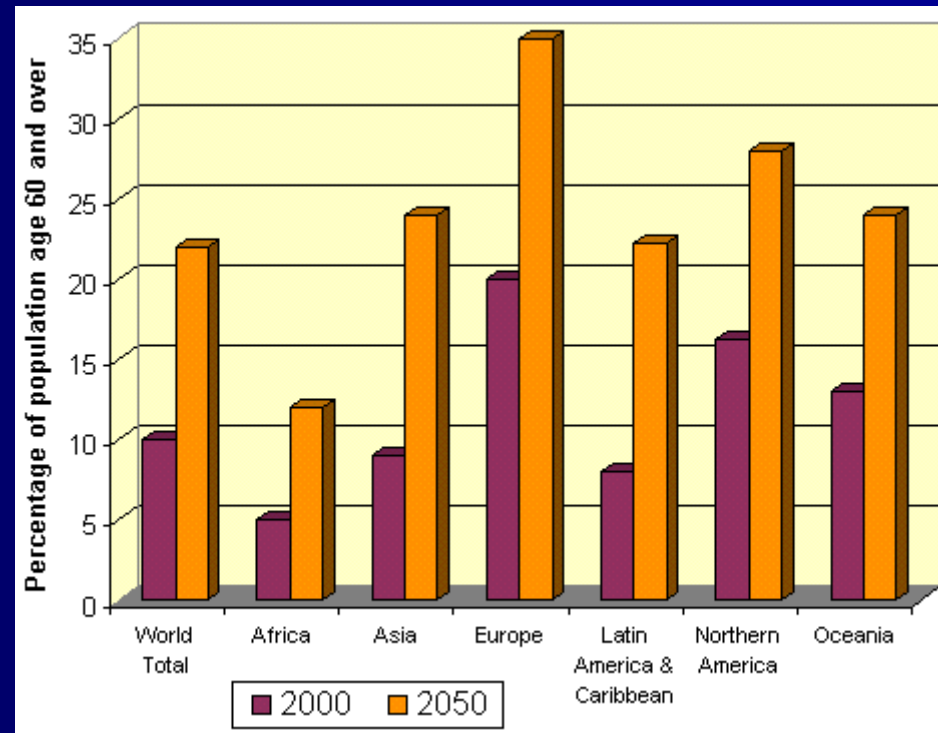


POPULATION GROWTH AND AGING: 2000-2050





Percentage Increase in Age 60 and Over by Region, 2000-2050



Source: *World Population Prospects, The 1998 Revision, Volume II: Sex and Age*. The Population Division, Department of Economic and Social Affairs, United Nations Secretariat

Rural vs. urban populations

World

1950



71%



29%

1990



55%



45%

2025



35%



65%

Developed countries



46%



54%



27%



73%



17%



83%

Developing countries



83%



17%



63%



37%



39%



61%



Rural

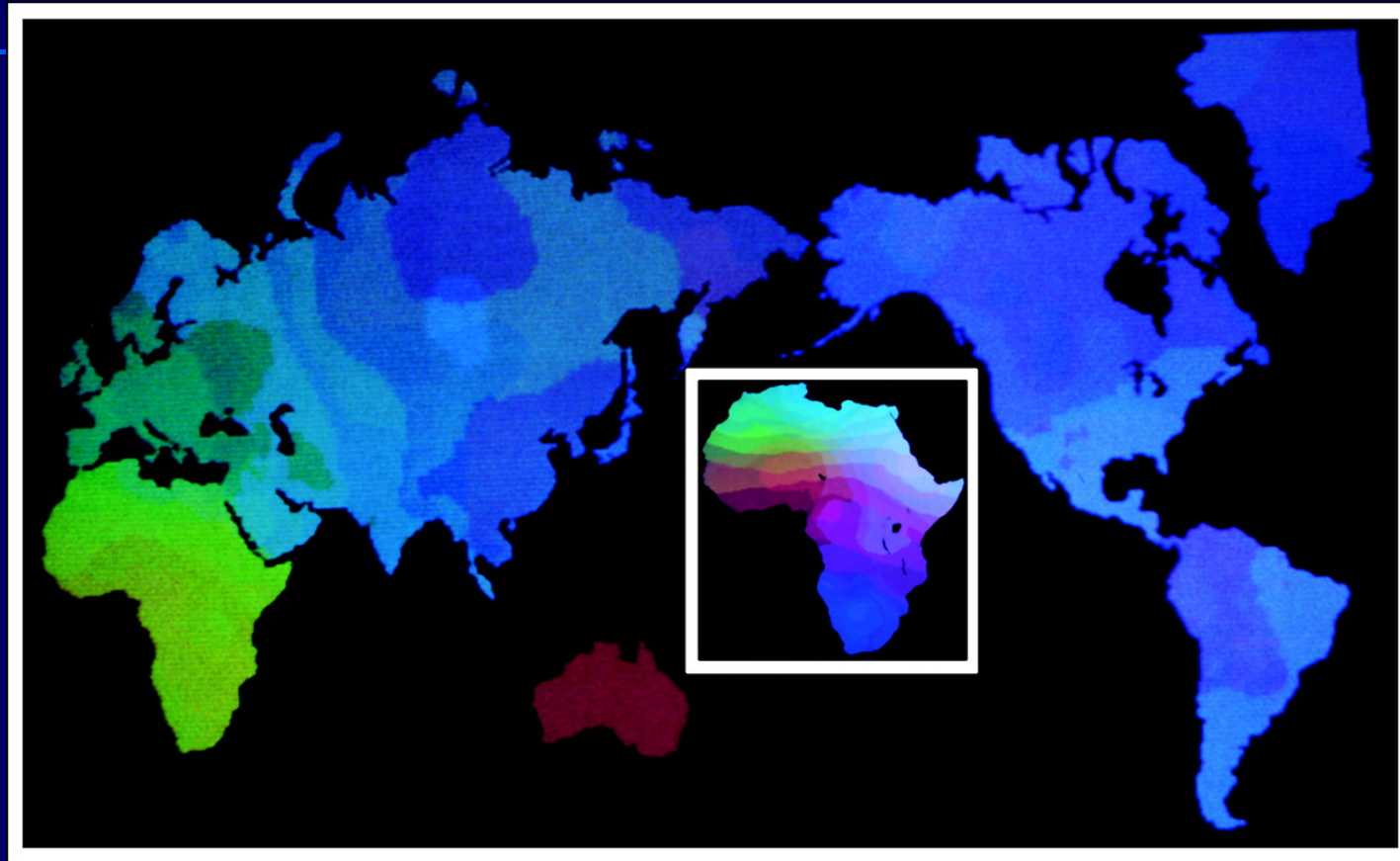


Urban

Genetic considerations

- **The majority of the data available today in the world literature are from developed countries populations.**
- **It is necessary to obtain confirmatory data form the real world populations.**

Human genetic diversity is distributed in gradients among and within continents



Maitland, M. L. et al. J Clin Oncol; 24:2151-2157 2006

Health care resources

World Health Care Expenditures

- **Developing countries (average) 75 u\$a**
- **Developed (average) 2500 u\$a**
- **Switzerland 4500 u\$a**
- **USA (US today,2006) more than 4000 u\$a**

Annually, per capita estimates

ECONOMIC ASPECTS

- MORE RESOURCES ARE RELATED TO BETTER OUTCOMES?

Country	Health spending as % of GDP	Age-standardized cancer deaths per 100,000 people	Five-year survival rates	
			Colon cancer	Breast cancer
USA	12.7%	N/A	60%	82%
Germany	10.5%	196.7	48%	68%
Switzerland	9.8%	182.1	51%	76%
France	9.6%	194.3	45%	72%
Netherlands	8.6%	206.8	50%	72%
Italy	7.6%	199.9	42%	72%
Spain	7.6%	179.8	46%	64%
Finland	7.5%	163.0	49%	75%
Sweden	7.2%	161.3	N/A	N/A
UK	6.9%	206.5	36%	63%
Denmark	6.4%	226.5	38%	69%

Source: World Health Organisation, 1998; Berrino et al, 1995; Murray 1998; World Bank, 1993

Latin America

Annual Meeting 2005





Annual Meeting 2005



Latin America

- South America
- Mexico, Central America and Caribbean islands with a Romance language
- 23 countries
- 2004 : 550 millions
- 2050 : 767 millions (projection)

Pandora box

- America discovery : conquest and colonial wars (largest known genocide)
- Europeans adopted the TOBACCO (usually cultured in tropical and subtropical countries)
- Thus, lung cancer pandemia (and other tobacco related diseases) had its origin in Latin (Central) America (largest known voluntary lethal intoxication)



Latin America

- Conquest and colonisation by Spaniards and Portuguese: late XV through XVIII centuries
- Independence wars in early XIX century
- Large differences: ethnic, geographic, climate
- Different social and cultural characteristics across pre-Columbian, colonial and independence periods

Cancer care in the region

- Some countries have National Cancer Institutes : Mexico, Peru, Brazil, Argentina, etc .
- Excellent public and private centers for treatment, mainly in big cities of some countries.
- Very good background for clinical cancer research

Cancer care in the region(2)

- Good clinical , surgical and radiotherapy facilities in main cities of some countries (INEN in Peru, Roffo Institute in Buenos Aires, AC Camargo in Brazil, INCA Mexico, etc)
- Heterogeneity of resources distribution, sometimes within the same country
- In general, lack of governmental preventive actions , national cancer plans and cancer registries.

Summary of Latin America

- There are resources and expertise , but generally very badly distributed.
- In some countries health care systems offer a good coverage for cancer patients (Chile, Argentina, Costa Rica, and others.)

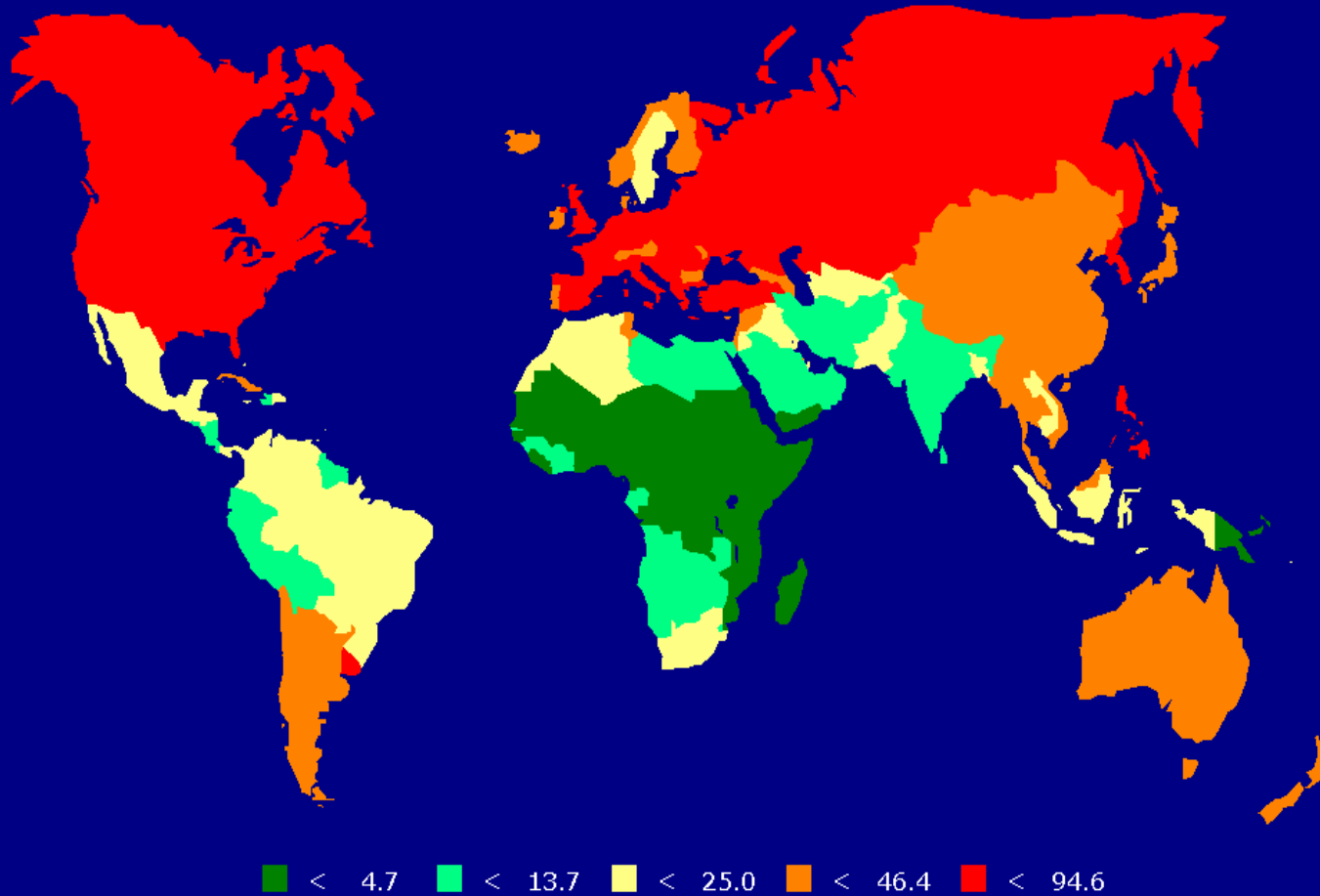
Cancer Registries in LatinAmerica

Cancer Registries in Latin America

- International recognised national (population-based, systematic and exhaustive) cancer registries exist only in Costa Rica
- Other countries have only regional registries (Argentina, Brazil, Colombia, Ecuador, Perú, Uruguay)
- Almost all have information of cancer death rate
- Thus, most of statistics are based on cancer rate mortality and estimation of incidence rates

Lung Cancer in Latin America

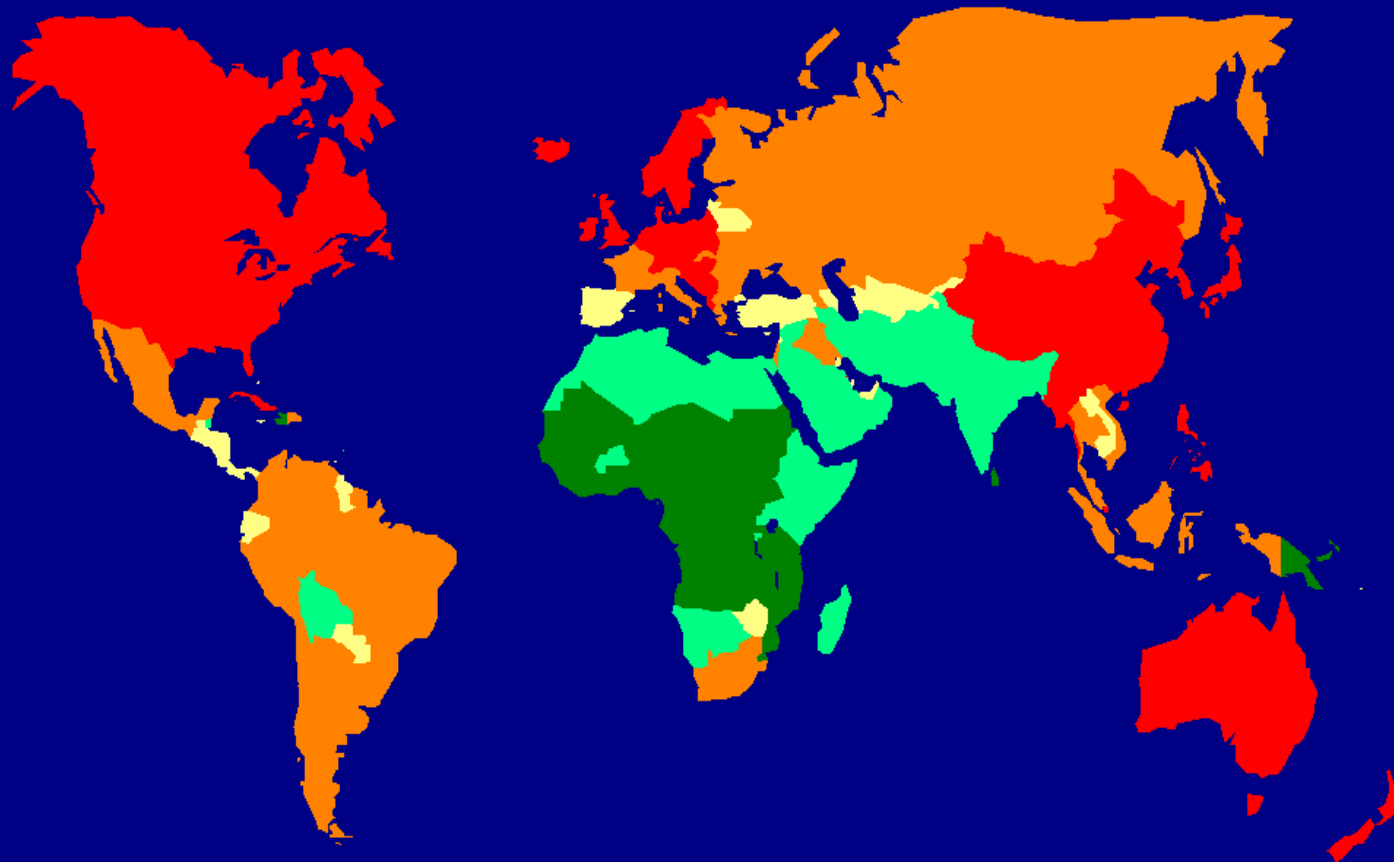
Lung, Males
Age-Standardized incidence rate per 100,000



GLOBOCAN 2002, IARC

**Lung
cancer
incidence
rate
per
100,000
Males**
< 4.7
< 25.0
< 94.6

Lung, Females
Age-Standardized incidence rate per 100,000



■ < 1.7 ■ < 3.7 ■ < 6.5 ■ < 11.5 ■ < 36.1

GLOBOCAN 2002, IARC

**Lung
cancer
incidence
rate
per
100,000
Females**

< 1.7

< 11.5

< 36.1

Tobacco in Latin America

- **Heterogeneous tobacco consumption:**
 - 25 – 55 % in males
 - 5 – 35 % in females
- **Most countries have an anti-tobacco law**
- **Only half of specialists feel that the law has had a beneficial effect**
- **In half of the countries, the policy has been to increase the tobacco price (most participants consider it a good practice)**

R.Arriagada, LA survey

Lung Cancer in Latin America

Conclusions

- 1. Economical, cultural, medical legislation and practice heterogeneities exist**
- 2. Generalisation remains difficult and hazardous**
- 3. However, a large effort should be done in terms of education and research developments**
- 4. It is plausible that the survey results do not represent the general situation in Latin America (specialists from hospitals and centres in large cities)**
- 5. The situation in the rural areas would be significantly different**

R.Arriagada, LA survey

Lung Cancer in Latin America

Conclusions II

- 6. However, it was largely established that there is a need for developing**
 - a) Effective anti-tobacco laws**
 - b) High-standard education**
 - c) Independent research, at least in leading centres**

- 7. Other improvements will depend only on national economies and policies**

R.Arriagada, LA survey

Breast cancer in LatinAmerica

- **This issue will be presented in deep by Dr A. Guercovich, 4:45 Pm during session 4B., this afternoon.**
- **The information showed that regarding diagnosis and treatment the situation is very similar to rich countries.**
- **The big difference was observed in the lack of screening programs , in research and in technology resources (this only in the rural areas).**

The Radiotherapy issue.

Country	Population	Radiotherapy Units	Ingreso por Capita (u\$a)
Argentina	36,260,130	96	3580
Bolivia	8,274,325	7	960
Bahamas	303,611	2	N/A
Uganda	27,207,900	2	250
Zimbawe	11,634,663	2	620
Brazil	184,184,264	206	3000
Paraguay	5,183,081	4	1140
Uruguay	3,305,723	14	3900
USA	296,410,404	1878	41400
Ecuador	12,456,608	8	2210
India	1,028,610,328	186	620
Francia	58,518,748	195	30370
Arabia Saudita	22,673,538	8	10140
Bangladesh	123,151,246	11	440
China	1,292,270,000	609	1500
Iran	68,467,413	18	2320
Turkia	71,789,000	40	3750
Colombia	46,045,109	34	2020
Chile	15,116,435	22	5220
Cuba	11,177,743	9	N/A
Mexico	97,483,412	118	6329
Croacia	4,535,054	7	6280

Unidades de Radioterapia

País	Habitantes (mill)/unid RT
Uruguay	0,23
Argentina	0,42
Venezuela	0,52
Chile	0,68
México	0,82
Brasil	0,89
Bolivia	1,18
Paraguay	1,29
Colombia	1,35
Ecuador	1,55

País	Habitantes (mill)/unid RT
EEUU	0,15
Francia	0,30
Croacia	0,64
China	2,12
Arabia Saudita	2,83
Iran	3,8
India	5,53
Zimbawe	5,81
Uganda	13,6
Etiopía	70

Modif.por Guercovich A y Cazap E, basado en : Directory of Radiotherapy Centres

According to the computerised version of the Directory of Radiotherapy Centres (DIRAC-IAEA/WHO November 1999), there are 17.7 cobalt machines per million people in industrialised countries, versus 0.65 per million in developing countries.

In the USA, an average of 8.2 teletherapy machines serve a population of one million, whereas in Africa the average is 0.6.

Senegal only has one cobalt machine and a visiting radiotherapist serving the whole country and in Ethiopia there is a single cobalt machine and a therapist for the entire population of 70 million people.

This situation calls for an urgent holistic approach to remedial solutions.

Question

- **How can we discuss the role of conservative surgery for breast cancer in a worldwide scenario without adequate radiation therapy availability?**

Vaccines

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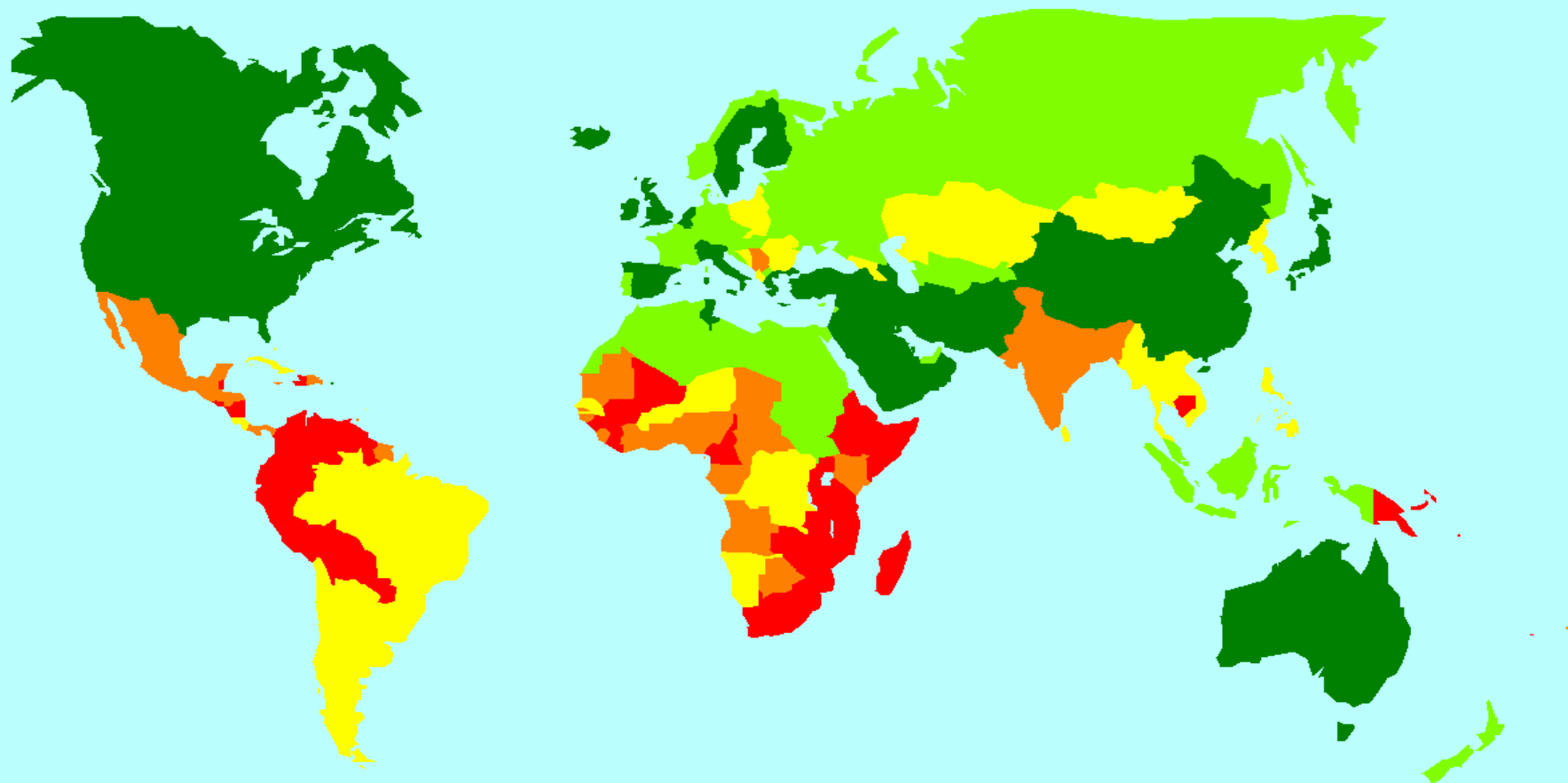


Vaccines: will they improve curability?

- **World Wide experience with Polio and Tuberculosis vaccines has been very DISSAPOINTING.**
- **50 years after the discovery of the Polio vaccine by Dr. J. Salk, the disease is still present in the planet.**
- **Tuberculosis not only persists, but it has been increasing in many countries, specially in connection with AIDS.**

CANCER OF CERVIX UTERI: 493,000 cases in 2002 (83% in developing countries)

Incidence of Cervix uteri cancer: ASR (World) (All ages)



■ < 9.3 ■ < 16.2 ■ < 26.2 ■ < 32.6 ■ < 87.3

GLOBOCAN 2002

HPV vaccine

- FDA approval in the US in June 2006 (Merck)
- Approved last November in Argentina and by approval process in several LA countries.
- There is other vaccine (Gardasil, GSK) in advanced stage of development.

Vaccines: will they improve curability? (cont.)

- **This year the vaccine for cervical cancer will be available commercially.**
- **Its way of implementation and probable cost, make me foresee a low probability of success in the short term.**

Cost per dose (3 total doses)

- EEUU: 100 to 120 U\$A
- Mexico: 240 U\$A
- Brasil: 265 U\$A
- Argentina : 250 to 300 U\$A

La Nacion newspaper, Buenos Aires, 27/10/06

Clinical research

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Clinical Research

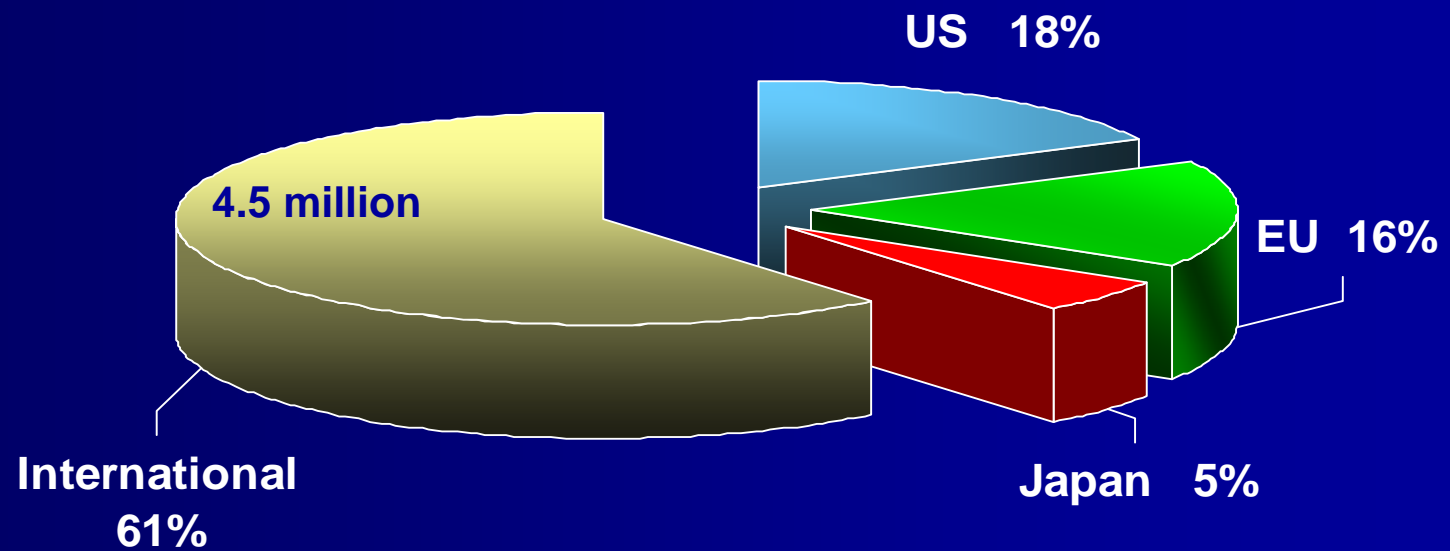
- During last years the number of clinical trials in the region with FDA approval have tripled in comparison with the U.S.
- Regrettably, most of them are industry sponsored
- Independent research continues to be very modest.

Regulatory Processes are evolving

- Fixed time limits for registration
 - Brazil requires 1 year
- Streamlined processes
 - Korea cut in half its IND timing & requirement
- Eliminated unnecessary review
 - CTD allows for easier format & review
- Harmonized regulatory requirements
 - Asian Harmonization
 - Could Latin America harmonize requirements ?

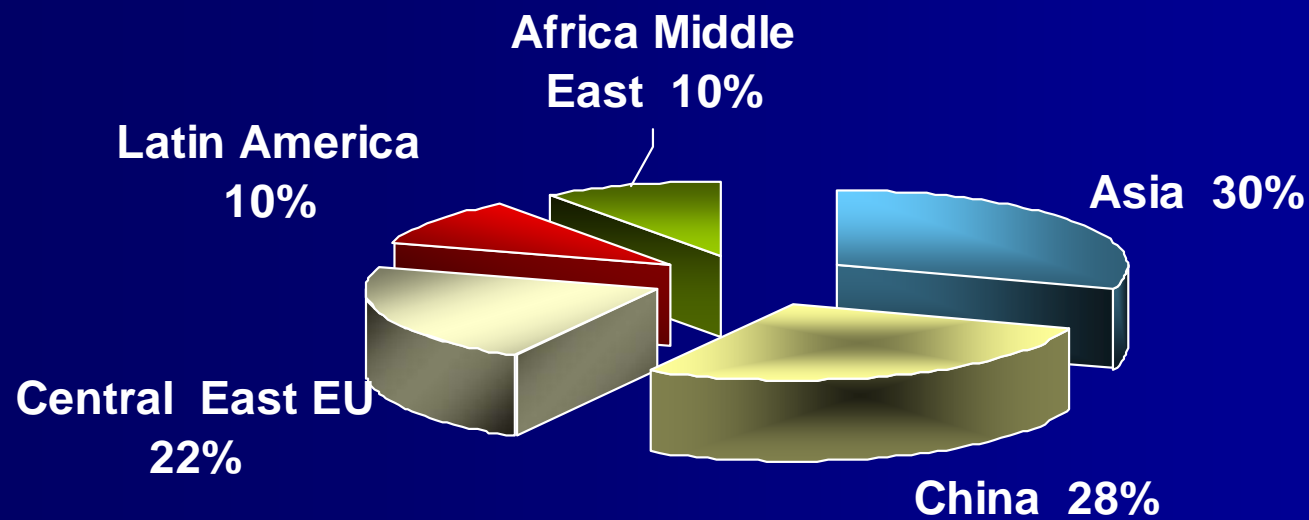
Why should oncology trials be conducted globally ?

Distribution of Patients with Cancer Worldwide



Source : Globocan / IARC 2000

International Distribution of Patients with Cancer (excluding US , EU , Japan)



Cancer Incidence Worldwide

FEMALE

US & West EU

- 1 Breast
- 2 Colorectal
- 3 Lung
- 4 Stomach
- 5 Ovary

Asia, China , Latin America

- 1 Breast
- 2 **Cervix**
- 3 **Stomach**
- 4 Colorectal
- 5 Lung

Cancer Incidence Worldwide

MALE

US & West EU

- 1 Lung
- 2 Prostate
- 3 Colorectal
- 4 Stomach
- 5 Bladder

Asia, China , Latin America

- 1 Lung
- 2 **Stomach**
- 3 **Liver**
- 4 **Esophagus**
- 5 Colorectal

Cancer Clinical Research

Reasons to conduct Clinical Trials Globally

Global Level

- Demographics
- Epidemiology
- Ethnicity issues
- Faster & Better

Local Level

- Knowledge transfer
- Technology transfer
- Develop local expertise
- Global & Local publications

Cancer Clinical Research

Reasons to conduct Clinical Trials Globally

**Regulatory
Environment**

Improvements in:

- Good Clinical Practices
- Dossier Review
- Regulatory Authorization
- Quality Control Systems
- Established Processes

Some practical and strategic considerations fro the coming years

IMPROVEMENT IN CANCER CURABILITY: NEW KNOWLEDGE?

- **If the knowledge we presently have, were applied correctly and to the majority of the world population, the curability of cancer would increase significantly.**

John Seffrin, past-ACS and UICC President

Strategy to develop

- We have to consider different aspects of the benefit according to our specific objectives balancing with the risks or negative impact.

Facts

- **There are no clear relationship between health care expenditures and number of cancer specialists and cancer curability.**
- **There are economic resources but badly distributed**
- **Access to cancer care resources is at the heart of cancer control in both developed and developing countries**

Proposals

- **To promote Clinical Cancer Research in the developing world.**
- **To provide better cancer care, a Minimal Clinical Recommendations guideline for all countries should be established.**
- **To influence governments to develop National Cancer Plans and cancer registries**
- **Collaborative efforts with developed countries will be useful and productive.**

Proposals (cont.)

- Although successful cancer therapies have been identified over the past 30 years, treatments are often toxic, expensive, and require highly trained staff and specialized facilities. Consequently, the most feasible methods to reduce global cancer disparities are to target etiologic factors and high-risk behaviors and to develop strategies for prevention.

Proposals (cont.)

- The search for more simple and economic cancer treatments.
- To confirm and apply cancer treatments adequate to different populations.
- To obtain scientific credibility and data from all cancer populations.
- Making health care resources more equally available between the developed and the developing countries will continue to be critically important.

Muchas Gracias
Muito Obrigado
Thank you

