Developing Countries

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Cancer as a Global Health Issue: Strategies for Success

Ian Magrath

International Network for Cancer Treatment and Research

The Problem

- Infections have, historically, been the most important cause of disease-related death
- The 20th century saw dramatic changes to the disease spectrum; a decrease in communicable diseases and a rise in non-communicable diseases
  - Resulting from major social changes, along with medical advances that first occurred in industrialized countries
  - These changes are spreading across world, at different rates in different socioeconomic circumstances
- In countries with predominantly rural populations, infections are still of primary importance
- *But*: NCD's, including cancer are now the predominant *global* health problem and account for an ever-increasing fraction of disease in low-income countries

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The Continuing Crisis

WHO estimates that **7.6 million** people died of cancer in 2005 - representing **13%** of deaths worldwide.

Cancer causes more deaths globally than AIDS, malaria and TB combined

Between 2005 and 2015 84 million more people will die if urgent action is not taken (x 4 'flu pandemic of 1918).

Cancer is not (and never was) simply a problem of rich countries - more than 50% of all cancer and **70%** of all cancer deaths occur in **low and middle income** countries.

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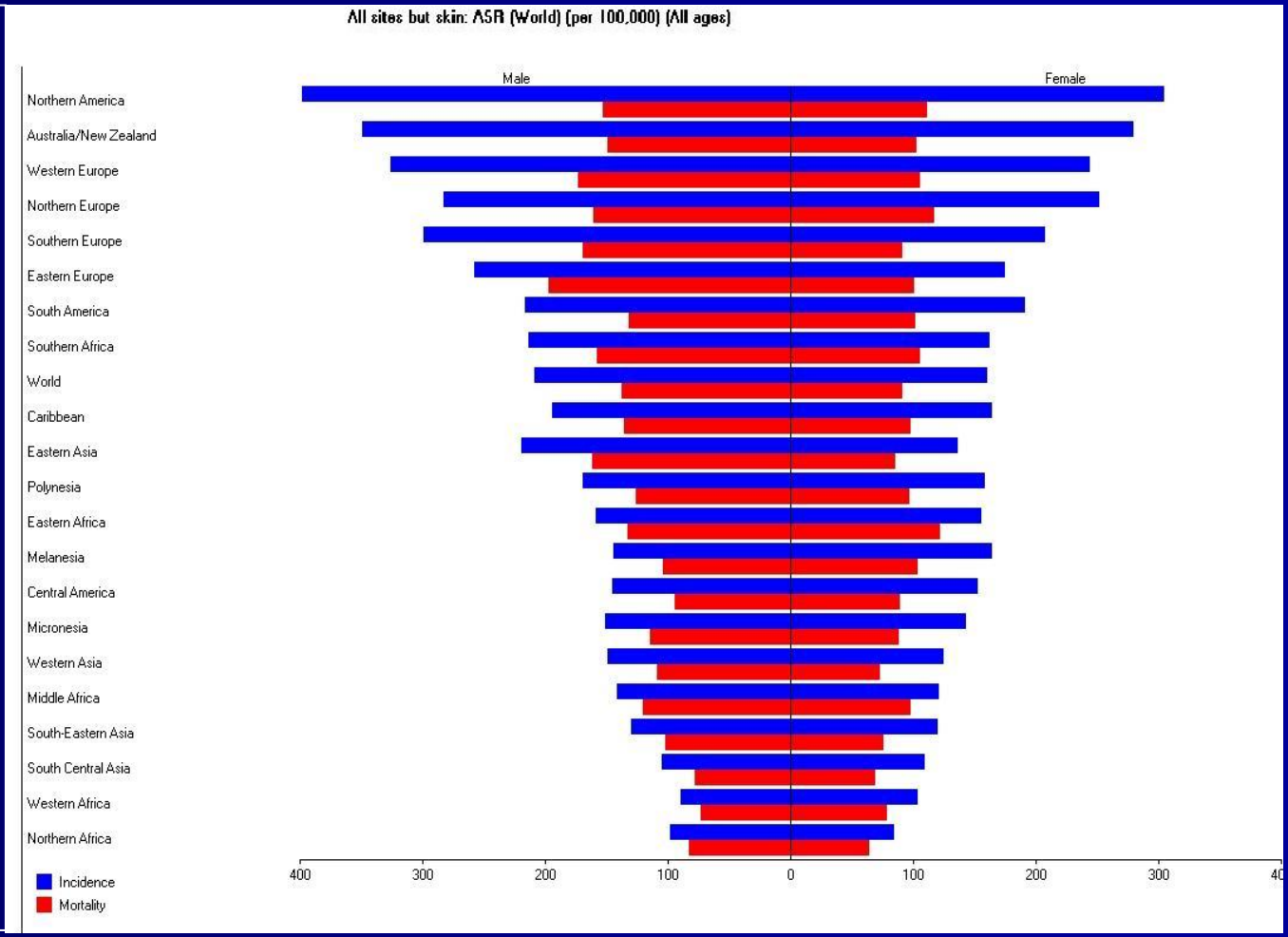
ASR (World) by region

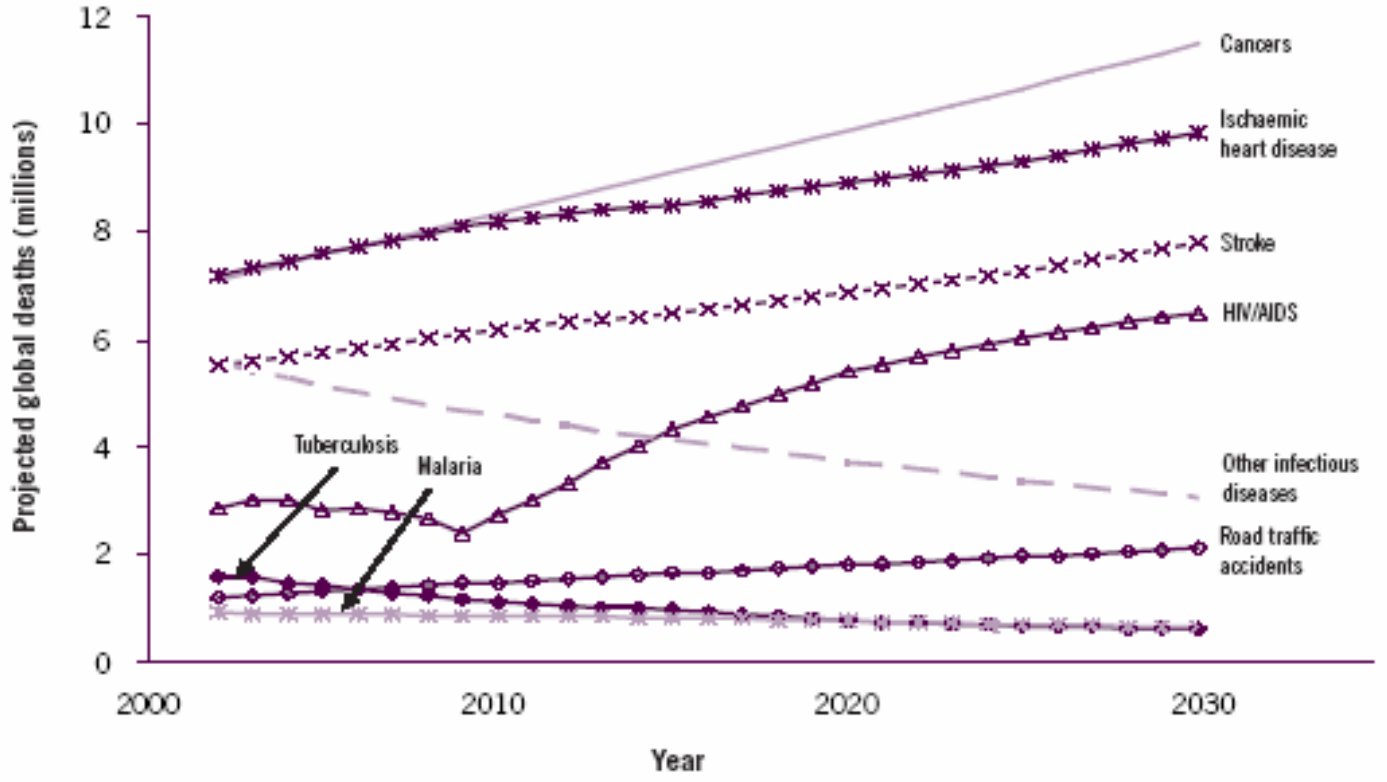
A) Although developing countries have lower incidence (blue), a higher fraction of patients die (red).

B) As populations age, ASR will come to resemble crude rates



3. Future health: projected deaths for selected causes to 2030

Projected global deaths for selected causes of death, 2002–2030[15]



Projection: NCDs will cause 70% of deaths in 2030

WHO statistical highlights, 2007

Impact on Developing Countries

- The global cancer burden will increase in all countries but more rapidly in less developed countries as populations increase in size, people live longer and exposure to risk factors (tobacco, high fat diets) increases
- Developing countries will bear an ever-increasing share of the cancer burden
- Mortality from cancer will account for an ever-increasing fraction of overall mortality

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Main causes of cancer

- Tobacco
- Diet and lack of exercise (high calorie diets an increasing problem, first affecting more affluent populations)
- Infections (more of a problem in developing countries)
- Ultraviolet light (skin cancers)
- Other carcinogens (asbestos, aflatoxin)

Relative importance differs in different populations and regions

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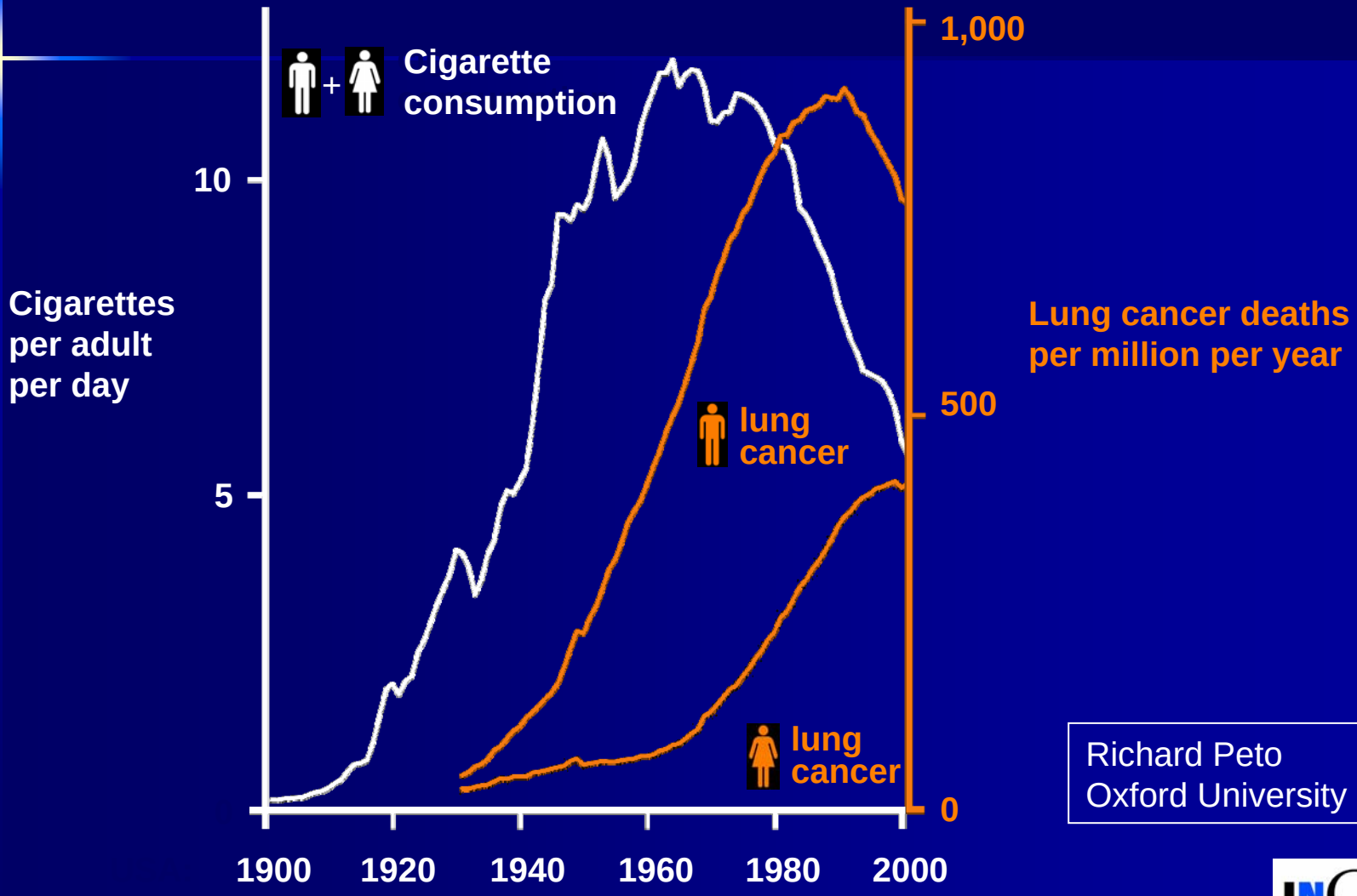
Delay between cause and effect: cigarettes, then lung cancer deaths (US)



Richard Peto
Oxford University

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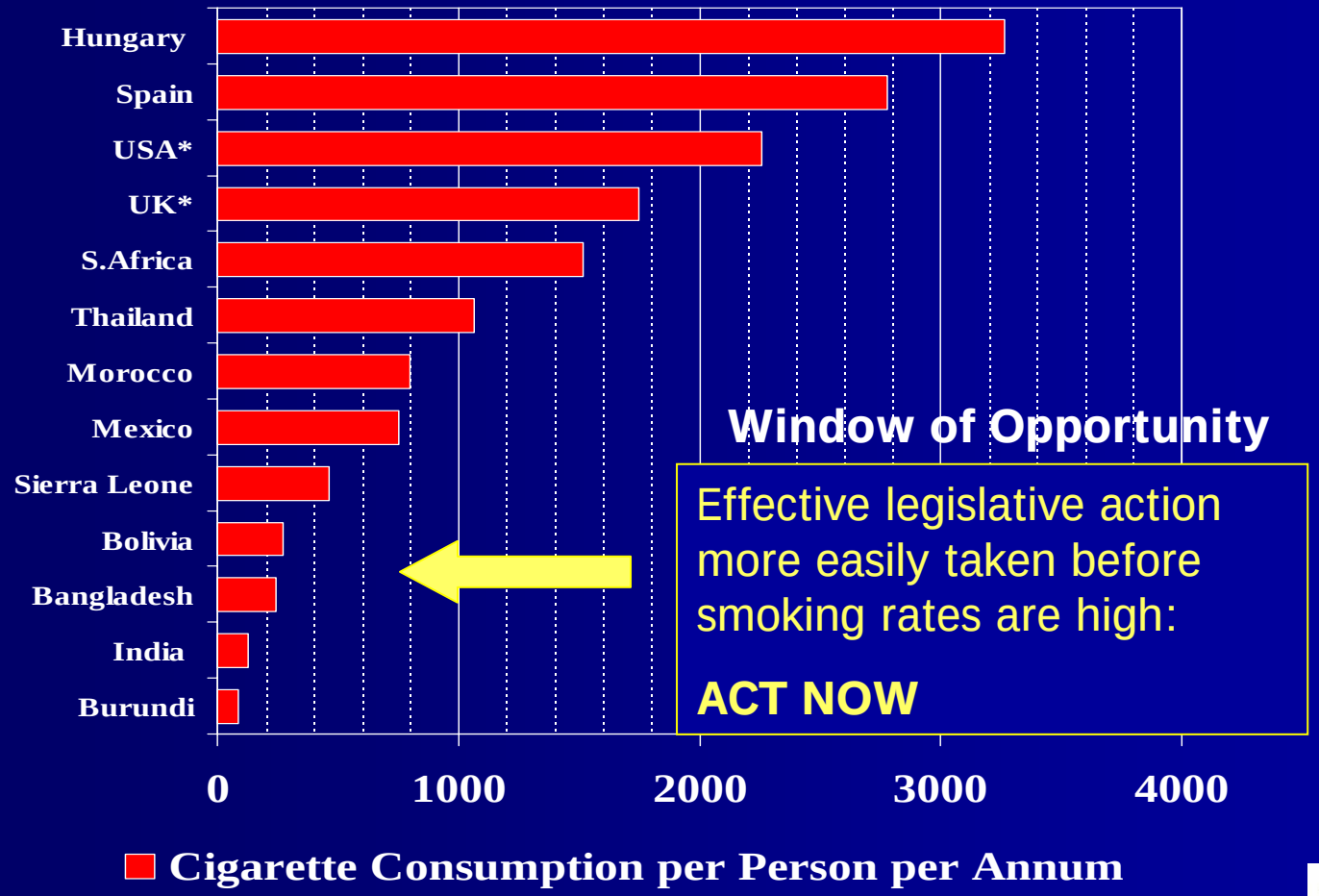
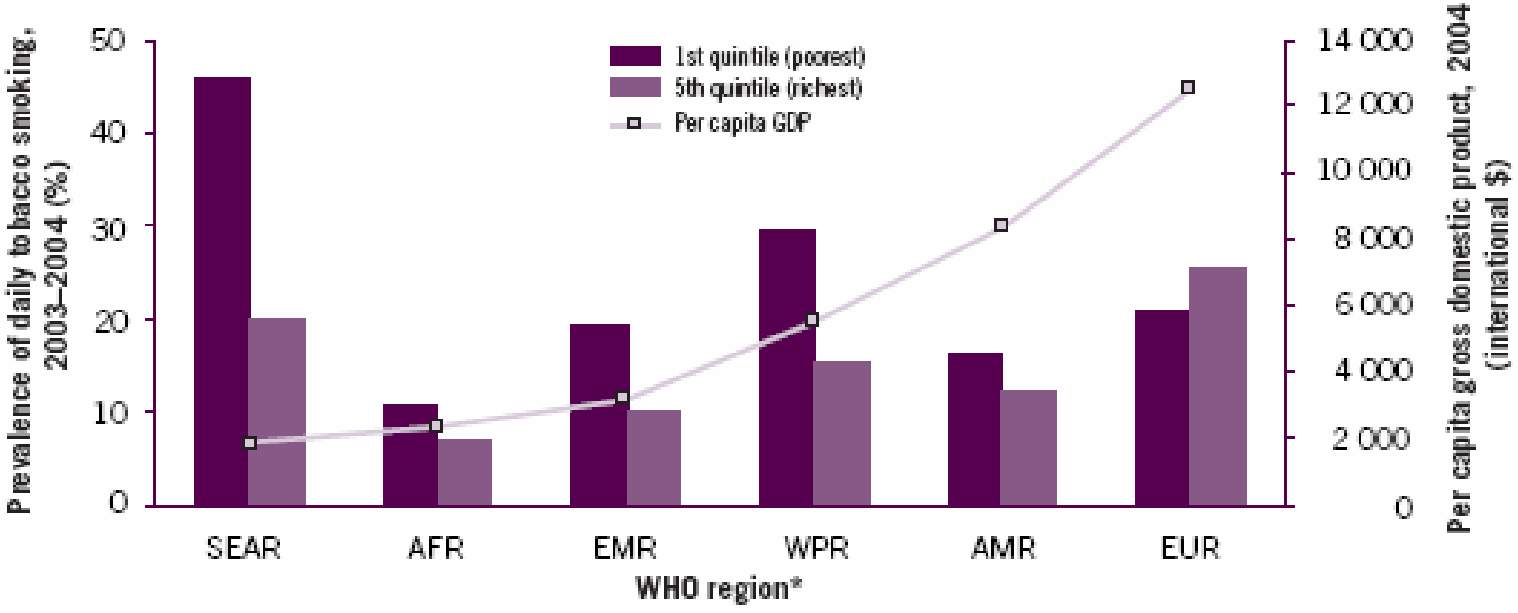
Progression of Tobacco Epidemic in Various Countries



6. Tobacco use and poverty: high prevalence among the world's poorest

Daily tobacco smoking among adults aged 18 years and older, by income quintile and WHO region[20]



SEAR, South-East Asia; AFR, African; EMR, Eastern Mediterranean; WPR, Western Pacific; AMR, Americas; EUR, European.

>80% of the 8.3 million tobacco deaths in 2030 will be in low and middle ICs

Obesity and Cancer Prevalence (%) in USA, 1992-2005

- Some cancers are associated with being overweight (endometrial, breast, colon)
- In 1992, over 50% of adults (18 yrs+) were overweight in 12 states in the USA
- By 2005, over 50% of adults were overweight in all states in the USA
- This second “epidemic” is spreading to many other countries

Infections and Cancer

- More important as a cause of cancer in low income and rural settings
- May account for 40% or more of cancer in some African countries
  - Viruses, such as HBV, HPV, HHV8, EBV
  - Bacteria such as Helicobacter pylori
  - Various parasites (e.g., Schistosomiasis)
  - HIV infection
- Risk can be markedly reduced by prevention with vaccines (HBV, HPV) or treatment (antibiotics, anti-helminthes, ARVs)

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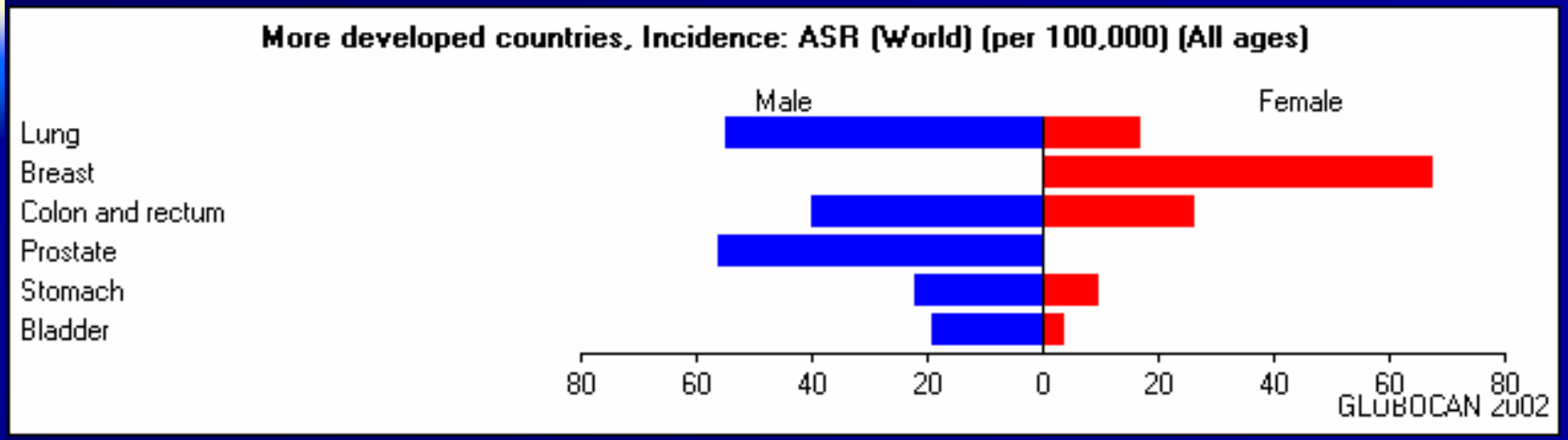
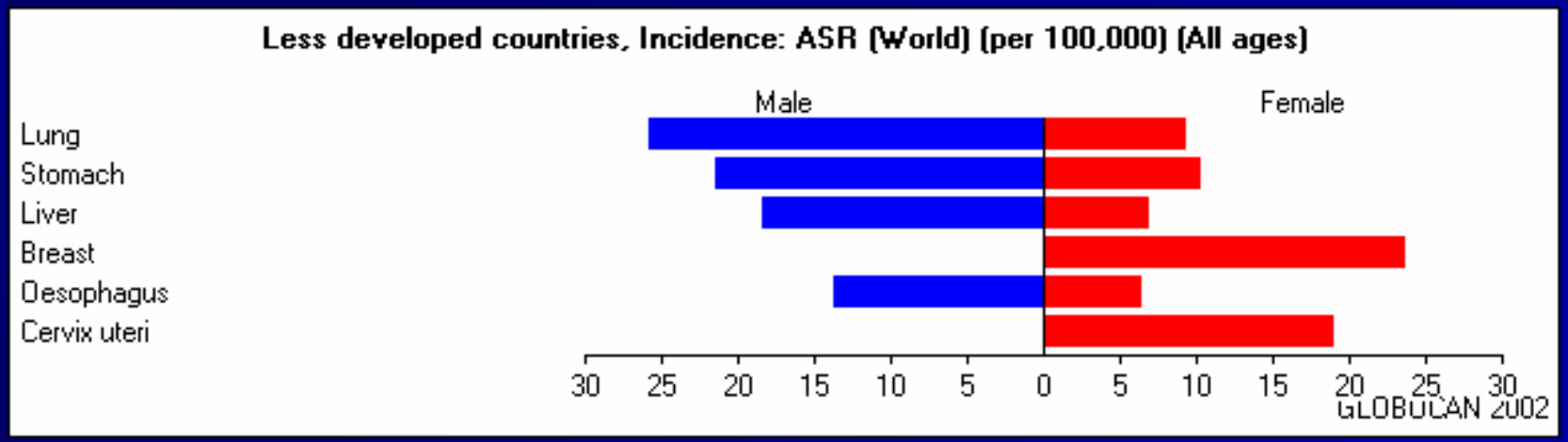
Cancer Patterns Differ

- Different cancers often have markedly different incidence rates in different world regions
- Optimal approaches to cancer control (prevention, early detection and treatment) vary with the cancer type

ASR of Top Six Cancers





Cancer Control: Reducing Morbidity and Mortality

- Prevention (avoidance of exposure to risk factors) most desirable when feasible
  - Not possible for all cancers
  - Will have its impact only after many years
- Treatment (many cancers are curable)
  - Early diagnosis ensures higher chance of cure for most cancers with simpler, cheaper therapy
- Palliative care (providing physical and mental comfort to patients and families)
  - Access to opioids essential: 80% of patients with advanced cancer require pain control

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Obstacles to Cancer Control in Less Developed Countries

- Access to care is generally limited
  - Too few tertiary care institutions and limited expertise
  - Expenditure on health care low; cancer can be costly
  - Poor populations with limited education
- Prevention is underemphasized
  - FCTC implementation hindered
  - Limited public education (risks and lifestyle)
- Main emphasis on treatment but not early detection
  - Education critical; some cancers can be screened for
- Late presentation limits treatment options
- Limited opioid availability for pain control

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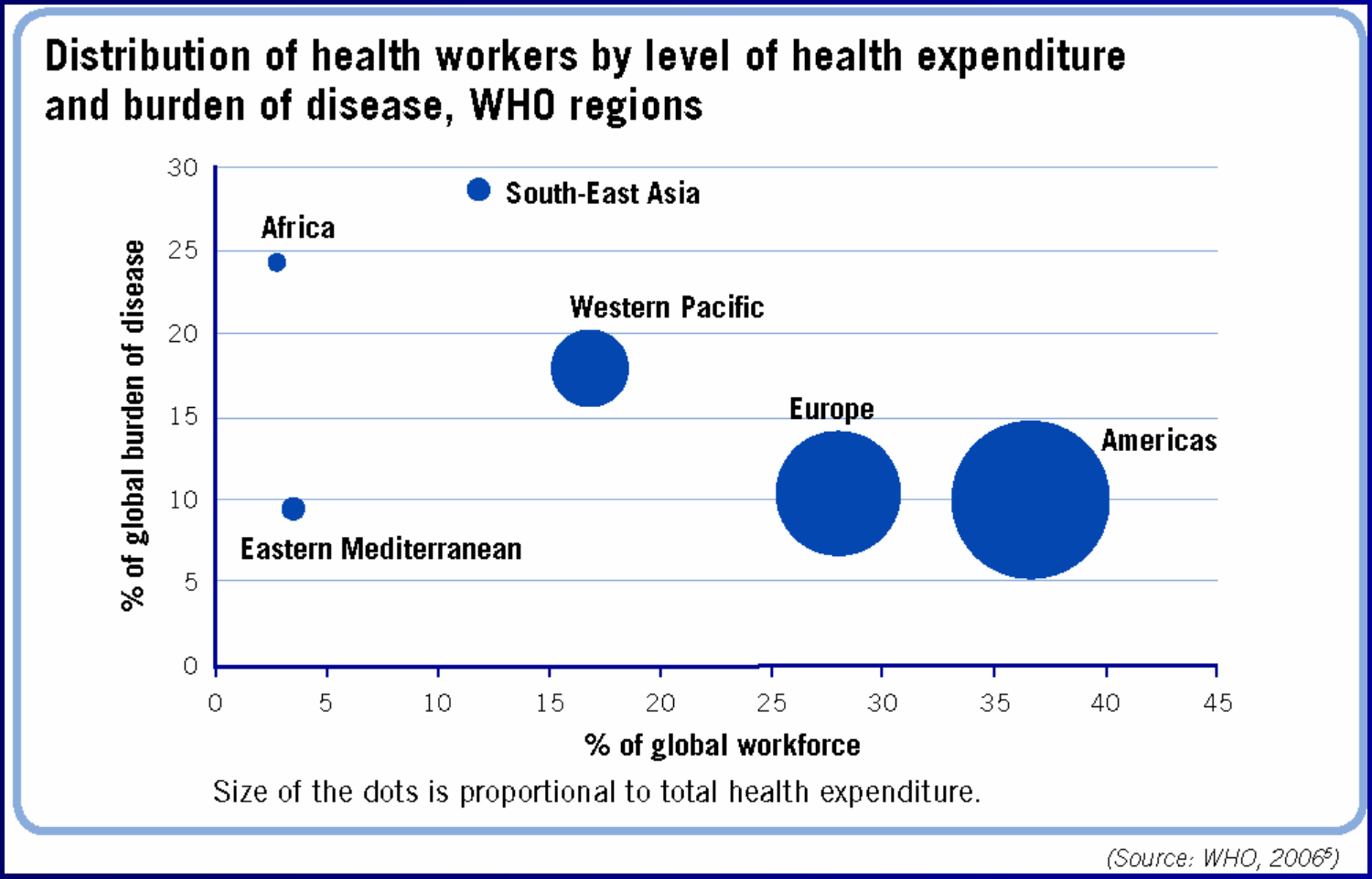
Disease Burden and Available Resources



(Source: WHO, 2006[5])

Global Resource Limitations for Cancer Treatment

- Too few radiotherapy machines (>20 countries have none) for needs of the population
  - In developing countries overall, enough for 1.85 million patients per year compared to 3 million who need it.
  - Maldistribution: many countries have one machine for millions of patients compared to 1 per 250,000 in high income countries (IAEA).
  - Many machines are idle for lack of maintenance, expired sources or lack of radiotherapists or physicists
- Variability in the range of anticancer drugs available
- Few poor people can afford high cost of treatment
- Limited human resources; trained health professionals tempted to work in urban regions, in the for-profit sector or in high income countries

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What Must be Done?

- Cancer must be elevated on the health agenda of governments as advocated by international organizations (UN)
  - WHA has approved a resolution (May 2005) recommending that all countries develop and implement cancer control plans
  - IEAE has established PACT in response to the developing world's cancer crisis

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What Can be Done?

- Assess
  - Cancer patterns and available resources
  - Gaps between actual and desired situation
- Plan
  - Determine priorities, feasibility and process
- Identify funding and human resources
  - External assistance frequently required to build capacity in low and middle income countries
- Implement interventions which have specific objectives and outcome measures
  - Much can be done with limited resources

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The Cancer Control Plan

- Cancer control committee created by government (or designated NGO)
- Committee develops a plan based on national priorities and resources
  - Refers to the cancer pattern, feasibility of control of selected cancers in the national context
- Interventions must be based on relevant evidence
  - May need to be collected locally – e.g., cancer registry, efficiency of interventions in the local context

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Prevention: Reducing Exposure to Risk Factors

- Reduce tobacco use (aero-digestive tract, urinary tract cancers, cervix)
  - Halving smoking rates would avoid 20-30 million deaths by 2025 (all smoking related diseases)
- Modify diet, chewing and alcohol use (oro-digestive tract cancers and hormone-related cancers)
- Control chronic infections associated with cancer (liver, cervix, bladder, bowel, KS, lymphoma)
  - More important in low income populations
- Minimize exposure to environmental chemicals (e.g. asbestos, agricultural, industrial) - often high because of lax regulations or enforcement in DCs
- Limit unprotected exposure to UV radiation (sun)

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Early Detection and Treatment

- Some cancers can be detected early by screening, and many by education about early signs of cancer (workforce and public)
  - Cervical cancer (visual inspection)
  - Breast cancer (education, examination)
  - Oral cancer (visual inspection)
- Localized cancer is more effectively treated using simpler, less expensive approaches

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Some Advanced Cancers are Highly Curable

One week

Total cost of chemo $150-200

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Palliative Care

- Relatively inexpensive, yet provides comfort (symptom control, psychosocial and spiritual support) and death with dignity when cure no longer possible
- Pain control a major component
  - Requires appropriate legislation re: opioids
  - Obstacles to opioid use (policy and attitudes of care-givers) remain high and must be overcome

Working Together

- Undertake assessment visits (e.g. imPACT missions (PACT), specialist visits)
- Hold thematic workshops focused on specific disciplines or cancers in order to:
  - Assess existing expertise and facilities
  - Identify obstacles to efficient practice
  - Propose feasible solutions
  - Seek needed support and implement

Improving Access to Care

- Involvement of primary health providers and secondary level hospitals in early diagnosis, simple therapy and palliative care
  - Training of primary providers to recognize early signs and screen for cancer
  - Development of networks linking major centers with secondary and primary levels
  - District “cancer coordinators”
  - Community health centers in rural areas with facilities for early diagnosis, palliation, education

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Partnerships to Progress

- Fostering mutually beneficial partnership programs between institutions in higher and lower socioeconomic circumstances
  - Education and training
  - Consultation
  - Research (essential for effective cancer control and sustainability)
- Maximizing “on-site” training via visiting experts, long and short term

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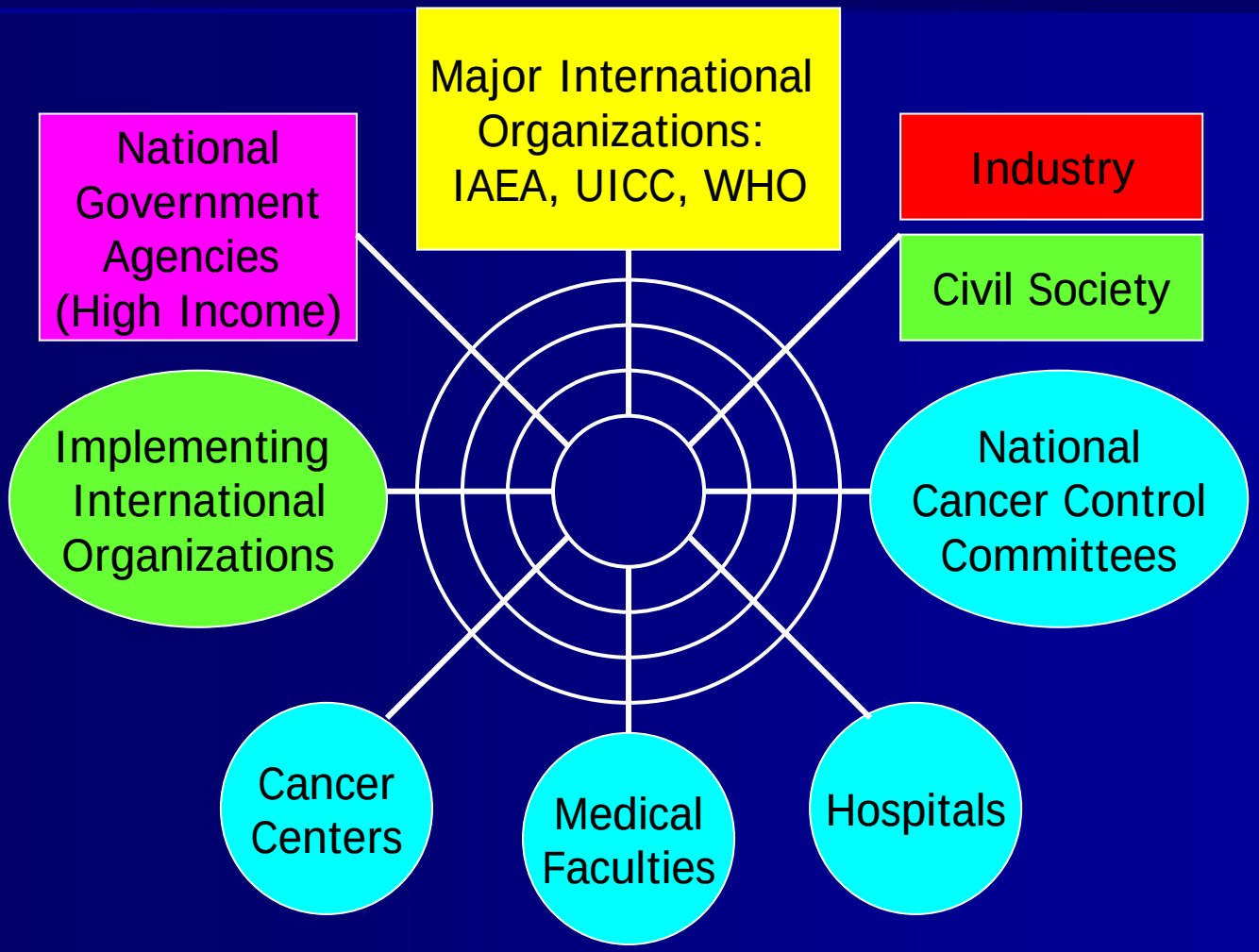
Use of Information Technology

- Videoconferencing
  - Between international partners for education and training, multidisciplinary conferences
- In regional networks for patient consultation and continuing education

The Global Network



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Conclusions

- Cancer is a high priority disease throughout the world that is still given too low a priority in developing countries where 70% of cancer deaths occur
- The cancer burden is increasing fastest in countries least able to cope with the problem
- In spite of limited resources, effective assessment, priority setting, planning and implementation would significantly improve the situation
- Collaboration and partnerships at a global level, involving a range of NGOs and GOs are essential
- PACT and recent WHO efforts are leading the evolution of a global cancer control program, but more funds must be invested to ensure success

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