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# National Burden of Disease (NBD) Assessment: Guidelines and Issues (Based on WHO Guidelines)

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## Section A

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### National Burden of Disease Assessment

# Learning Objectives

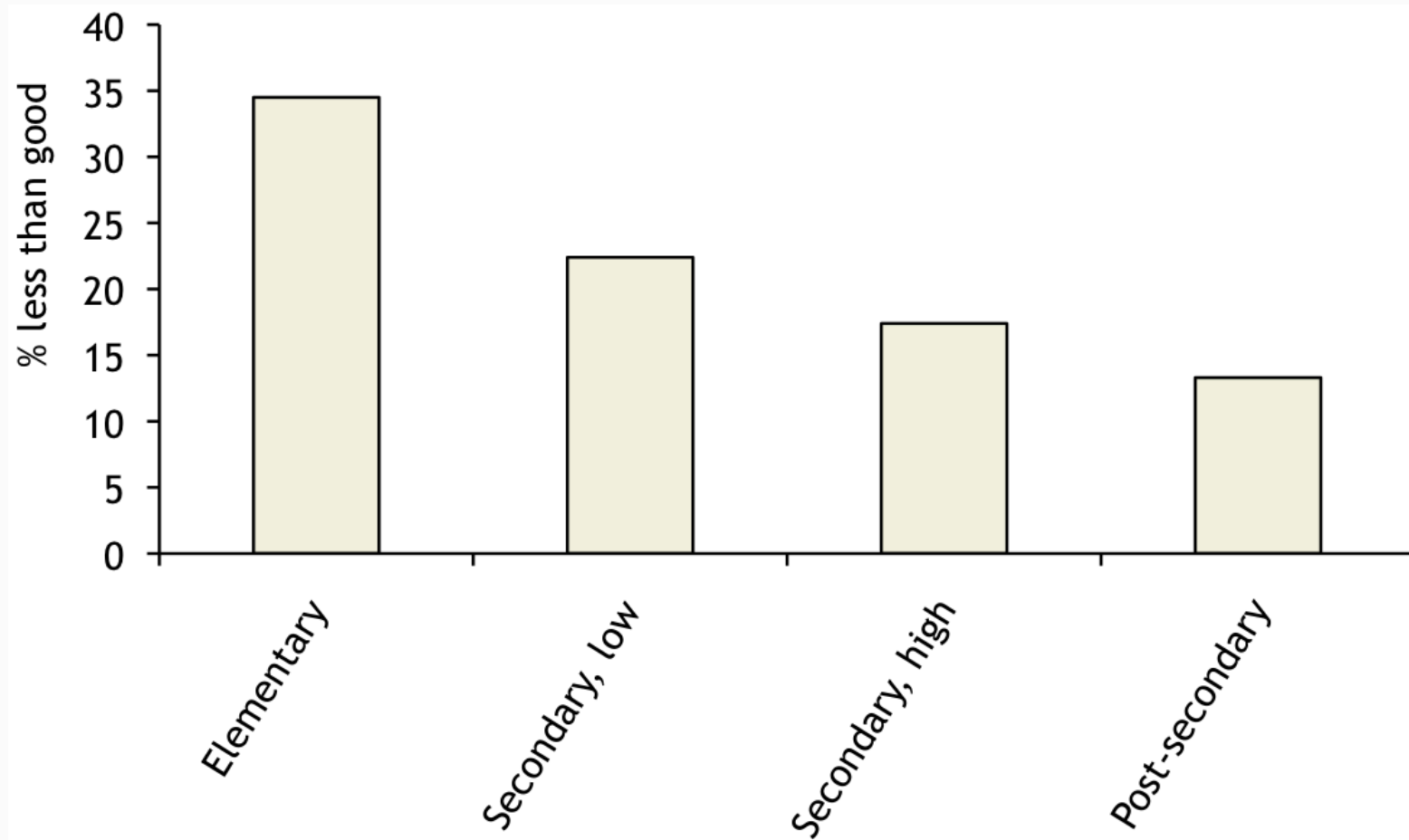
- To understand the rationale for a NBD assessment
- To define key technical decisions that need to be taken prior to an NBD assessment (level of analysis, analytic issues, non-analytic issues)
- To identify the process (major tasks and steps) involved in the conduct of an NBD assessment

# Why Do We Need an NBD Study?

- Why not just ask the people?

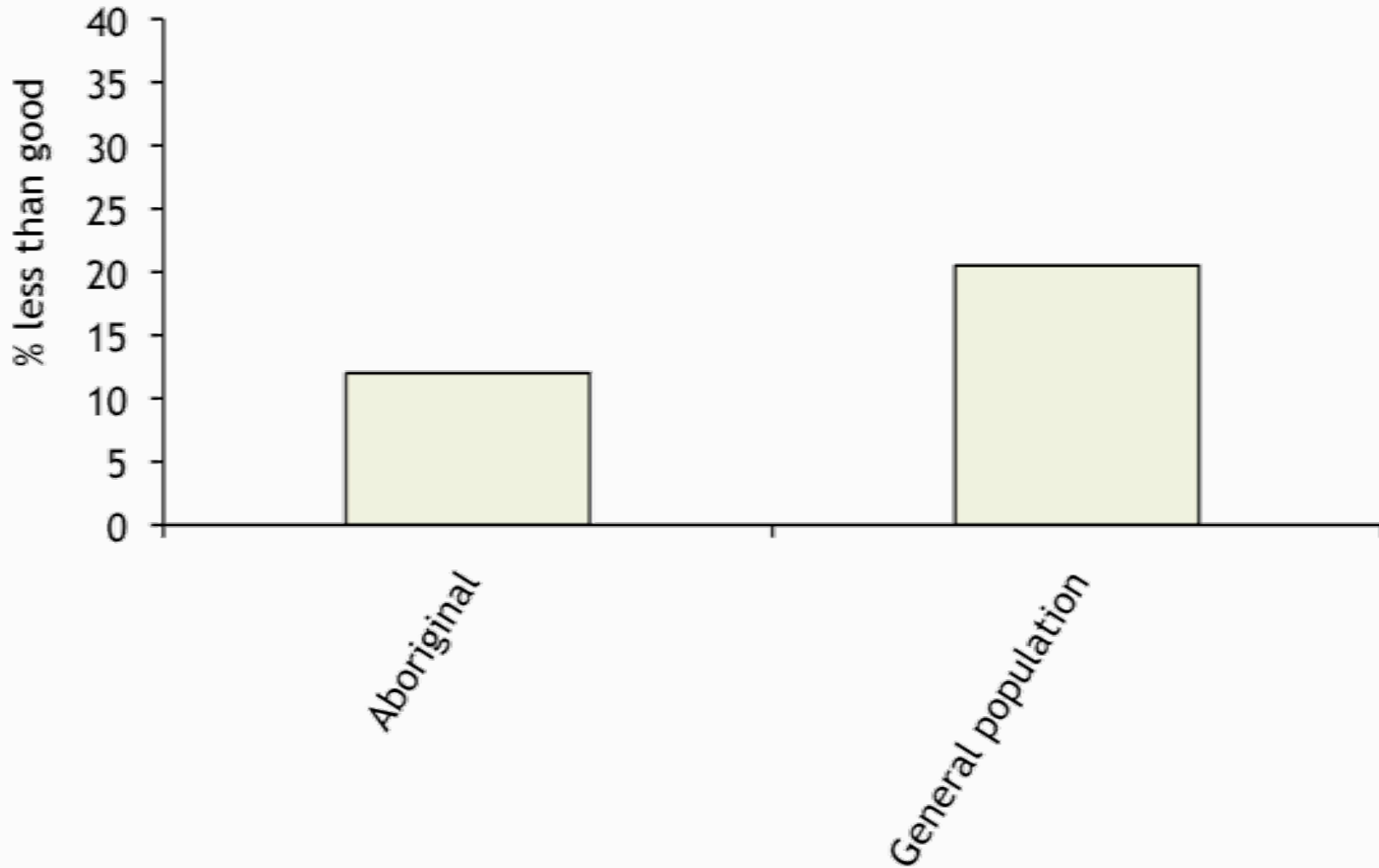
# Social Group Differences in Self-Assessed Health (1)

- Netherlands, 1992-1993



# Social Group Differences in Self-Assessed Health (1)

- Australia, 1995



## Objectives of NBD: No. 1

- To carry out a comprehensive assessment of the burden of disease, injuries, and important risk factors for the population in order to:
  - Provide a baseline for assessing improvements in health and performance of health systems
  - Provide comprehensive data on health needs to support rational resource allocation
  - Address inequalities in health status across subpopulations



## Objectives of NBD: No. 2

- To carry out cost-effectiveness studies to:
  - Develop alternative packages of essential health services with the potential to significantly reduce the burden of disease within available resources
  - Provide objective criteria for improving the effectiveness and efficiency of the health system
  - Provide key policy makers with clear options and the implications of those options for health sector performance and affordability

## Objectives of NBD: No. 3

- To establish in the country the technical and institutional capacity to carry out NBD and cost-effectiveness studies
- Objectives are “generic” and may be modified per national requirements!

# National Burden of Disease

- Issues in the approach

# Important Issues (1)

- Inclusion of all causes
  - Even when data are poor, it is better to estimate the burden of a disease than to ignore it
- Transparency of analysis
  - Value judgments and the steps in the analysis of the burden of a disease should be transparent and reproducible
- Judgment
  - An essential part of analyzing the burden of disease is judgment. An NBD study is not a mechanical analysis according to a set of “cookbook” rules.

## Important Issues (2)

- Focus on consequential variables
  - The focus of analytical attention should be on the assumptions and estimates that make a difference to the results
- Expanded ownership
  - Whenever possible, expand the ownership of the exercise so that, when the study is complete, there is a ready-made constituency for its results (stakeholders)

# National Burden of Disease Assessment

- Level of analysis

# Level of Analysis

## 1. Age groups

- Same as GBD 1990 (0-4, 5-14, 15-44, 45-59, 60+) or
- Same as GBD 2000 (0-4, 5-14, 15-29, 30-44, 45-59, 60-69, 70-79, 80+)
- Same as GBD 2005 (<1 month, 1-11 months, 1-4 yrs, 5-9, 10-14, 15-19, 20-24, 25-34, 35-44, 45-54, 55-64, 65-74, 75-84, 85+)

## Level of Analysis

### 2. Disease and injury categories

- Based on list for GBD 2000
- Reviewed to amalgamate disease categories not relevant to the country
- Identify any additional categories of public health importance in the country
- Categories that are mutually exclusive and exhaustive



# GBD Classification System—Main Categories

## **Communicable, maternal, perinatal and nutritional conditions (Group I)**

- A. Infectious and parasitic diseases
- B. Respiratory infections
- C. Maternal conditions
- D. Conditions arising during the perinatal period
- E. Nutritional deficiencies

## **Noncommunicable diseases (Group II)**

- A. Malignant neoplasms
- B. Other neoplasms
- C. Diabetes mellitus
- D. Endocrine disorders
- E. Neuro-psychiatric conditions
- F. Sense organ diseases
- G. Cardiovascular diseases
- H. Respiratory diseases
- I. Digestive diseases
- J. Genito-urinary diseases
- K. Skin diseases
- L. Musculo-skeletal diseases
- M. Congenital anomalies
- N. Oral conditions

## **Injuries (Group III)**

- A. Unintentional injuries
- B. Intentional injuries

## Level of Analysis

2. Disease and injury categories
  - Based on list for GBD 2000
  - Reviewed to amalgamate disease categories not relevant to the country
  - Identify any additional categories of public health importance in the country
  - Categories that are mutually exclusive and exhaustive
  - **Not to have more than 10-12% of total deaths in the sum of the “residual” categories**

# Level of Analysis

## 3. Regions for which estimates will be made

- At the minimum, estimates for a set of geographical regions based on broad regional zones
- Health planning regions, if relevant
- Other population subgroups of policy importance, e.g., ...
  - ▶ Urban/peri-urban/rural populations, or
  - ▶ Based on a socioeconomic variable, such as education level

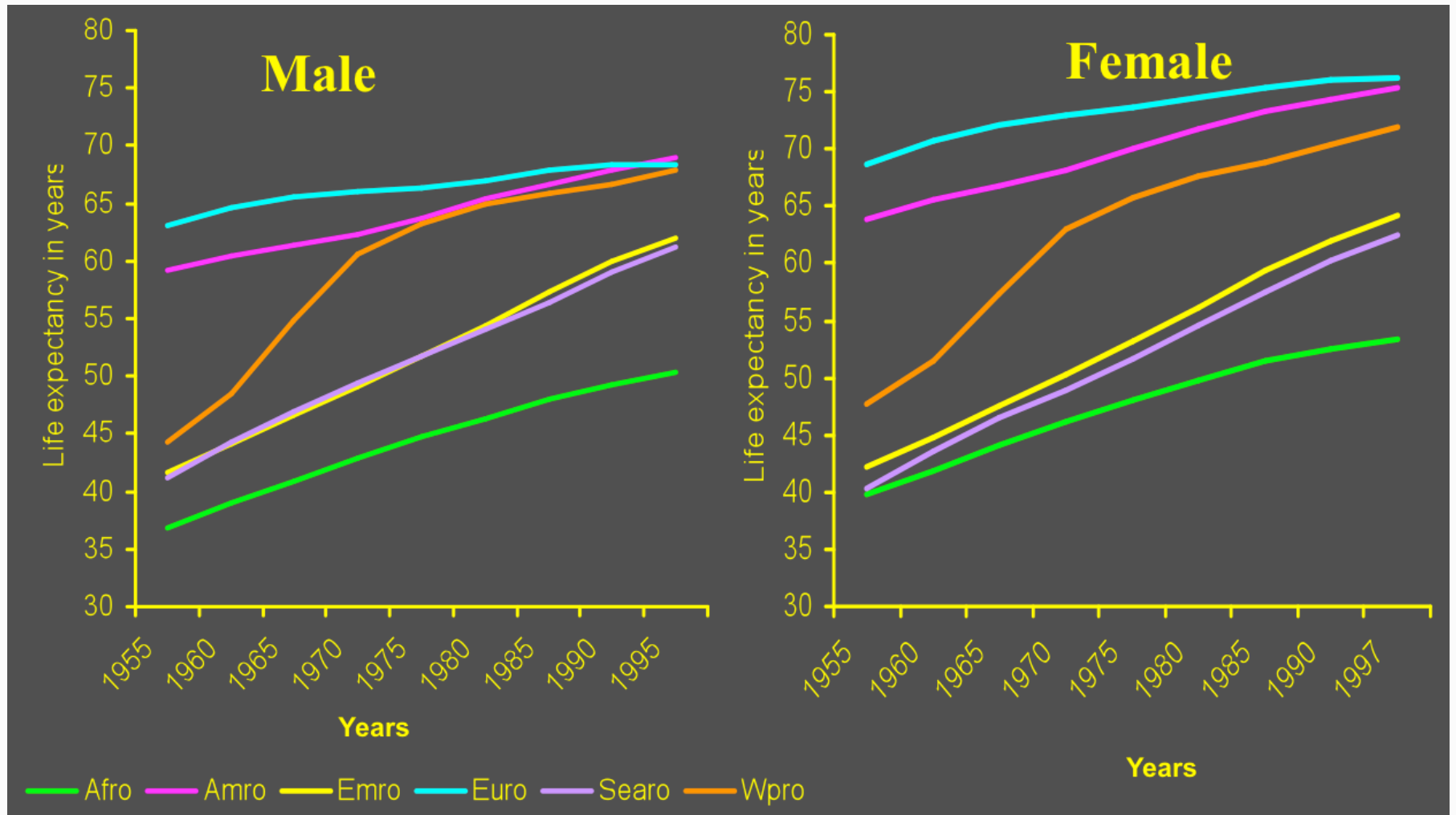
## Eight Americas: Investigating Mortality Disparities across Races, Counties, and Race-Counties in the United States

Christopher J. L. Murray<sup>1,2,3</sup>, Sandeep C. Kulkarni<sup>2,4</sup>, Catherine Michaud<sup>2,3</sup>, Niels Tomijima<sup>3</sup>, Maria T. Bulzacchelli<sup>3</sup>, Terrell J. Landiorio<sup>3</sup>, Majid Ezzati<sup>1,2\*</sup>

## Level of Analysis—Choosing Social Values

4. Remaining life expectancy
  - Loss of healthy life at each age is usually based on the “standard” life expectancy at each age
  - Comparability with other burden studies
  - Important to justify the choice

# Life Expectancy at Birth, by WHO Region, 1955-1997



Data source: World Health Organization

## Level of Analysis—Choosing Social Values

5. Discount rate
  - The GBD standard of 3%
  - Sensitivity of the results to the choice of discount rate should be assessed
  - Lack of discounting is a rate of 0%!

## Level of Analysis—Choosing Social Values

6. Age weights
  - Uniform/equal age weights
  - Age weights used in GBD
  - Age weights appropriate to the national situation
  - Sensitivity of the results to the choice



## Level of Analysis—Choosing Social Values

### 7. Disability weights

- Existing international standard weights (such as those of the GBD 1990 or GBD 2000 or Dutch disability weights), or
- Include a component on health state valuations to obtain local weights

## Level of Analysis—Choosing Social Values

### 8. Standard value choices

- One set of values (discount rate, age weights, remaining life expectancy) should be chosen as the *standard* for the main reporting and presentation of results

## NBD: Other Decisions

- Analytic and non-analytic

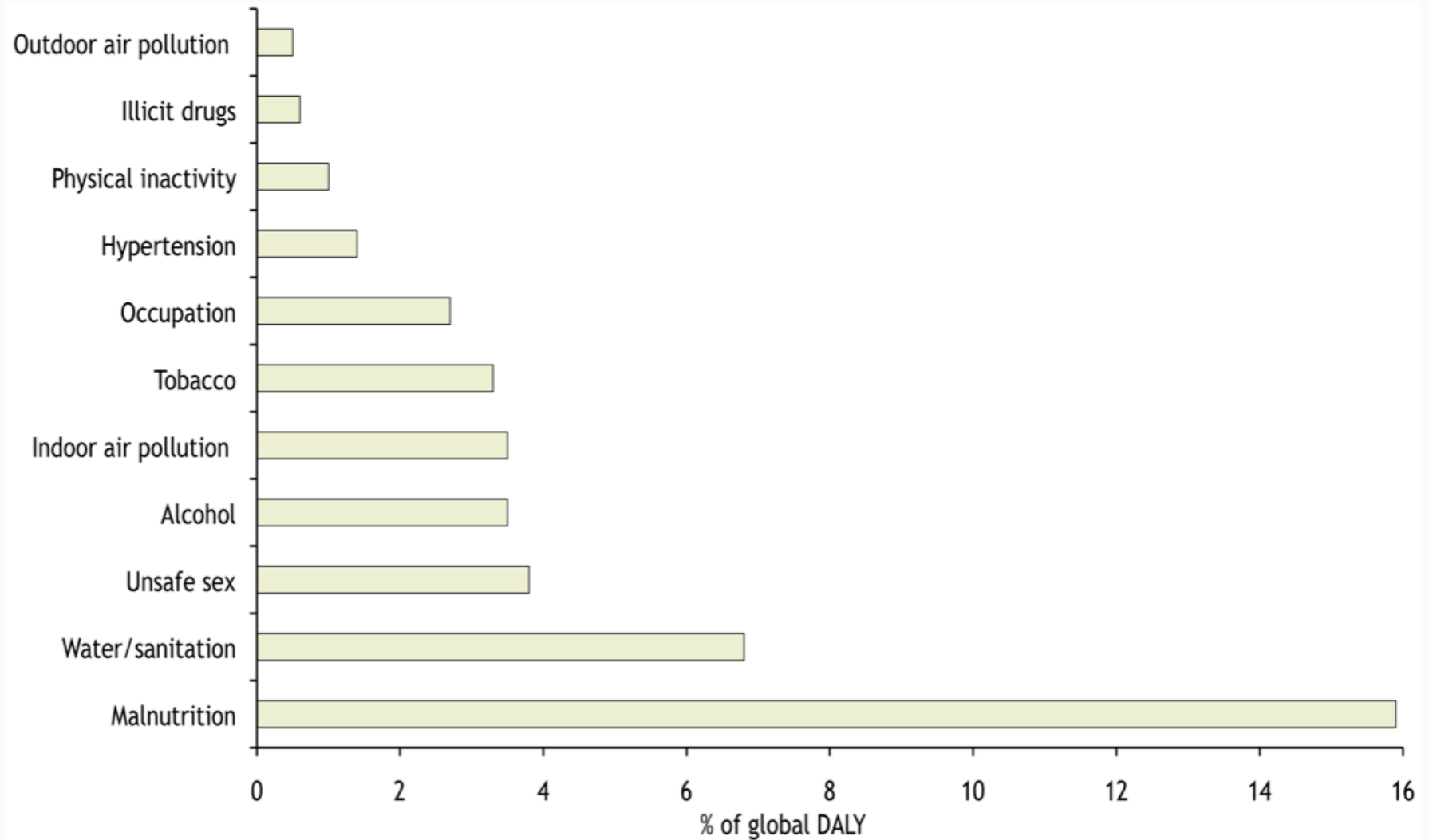
## Other Analytic Decisions

- Risk factors
  - WHO recommends that top six risk factors should be included
  - Alcohol, air pollution, unsafe sex, etc.

# Comparative Risk Assessment

- Select a minimum of five risk factors for analysis
- Gather information on prevalence and relative risk from local studies, i.e., surveys, epidemiological studies
- Search in the international literature for complementary information and relative risk data
- Estimate the burden attributable to each selected risk factor

# Burden of Disease Due to Selected Risk Factors, 1995



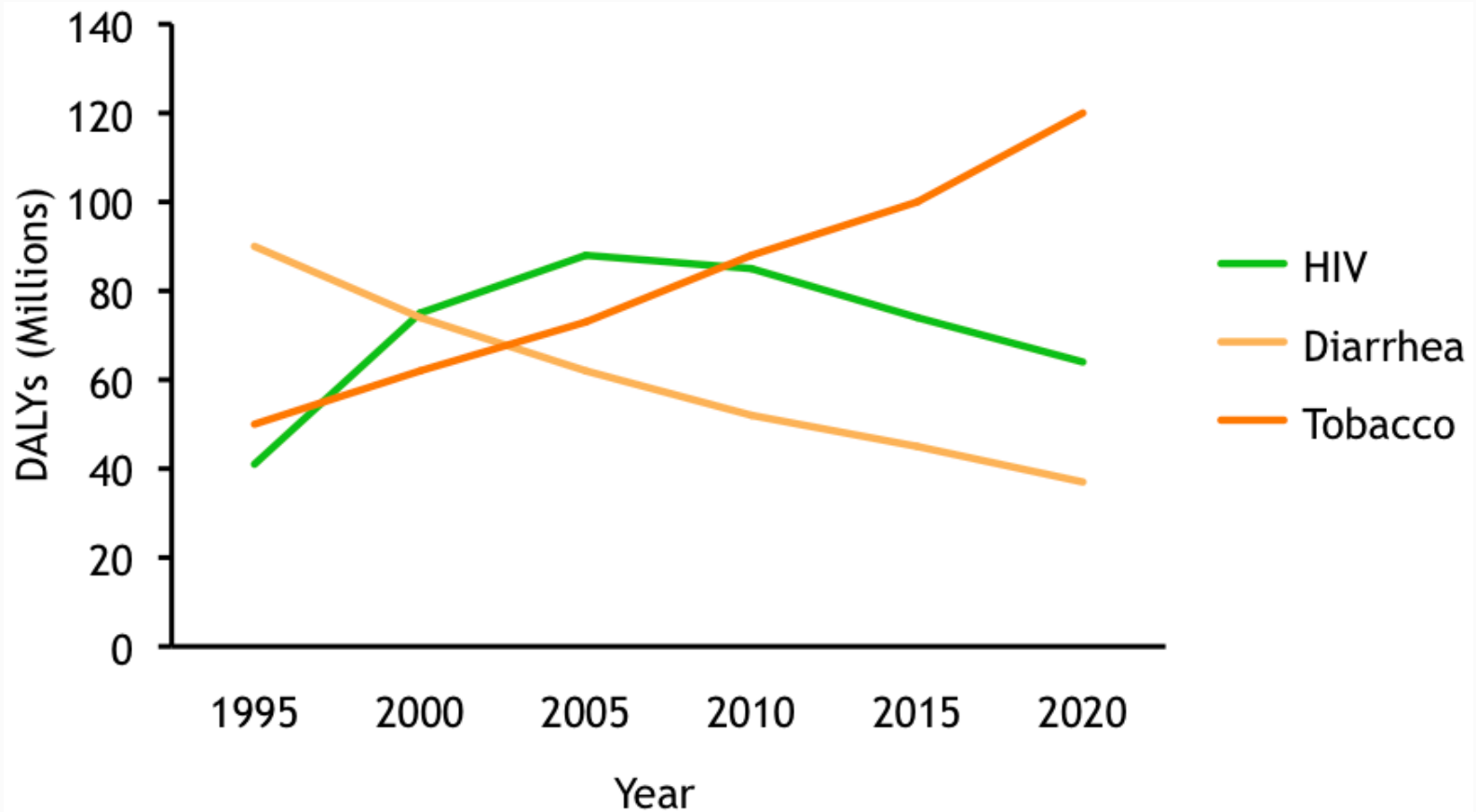
Data source: World Health Organization

## Other Analytic Decisions

- Risk factors
- Projections
  - Future time trends of burden
  - Into the next 10-30 years

# DALYs Attributable to Diarrhea, HIV, and Tobacco

- DALYs attributable to diarrhea, HIV, and tobacco, 1990-2020 (baseline scenario)





## Other Analytic Decisions

- Risk factors
- Projections
- Cost-effectiveness analysis
  - As part of the NBD study or not?
  - National need?

## Other Non-analytic Decisions

- Human resources
  - Epidemiology, demography, etc.
- Physical space, administrative supplies, computer support
  - Commitment and capacity to conduct
- Training for personnel
  - Methods and process
- Organizing workshops, etc.