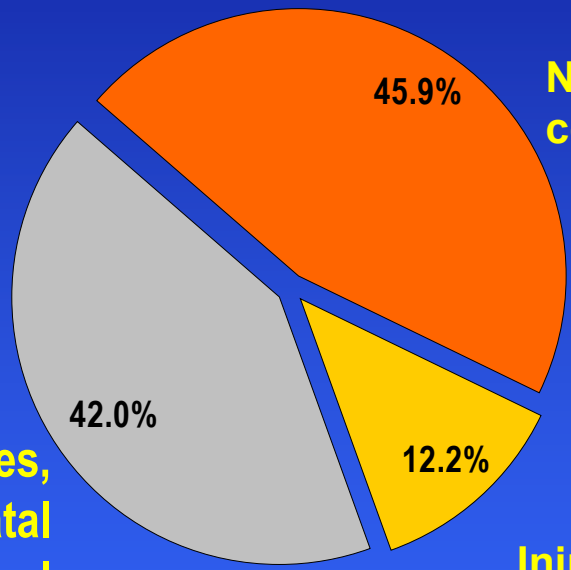
Chronic Diseases: a global view

Surveillance/NMH

WORLD
Disease Burden (DALYs), by broad cause group, 2001



Source: WHR 2002

Leading Causes of Mortality and Burden of Disease
Preliminary estimates for 2000

Mortality

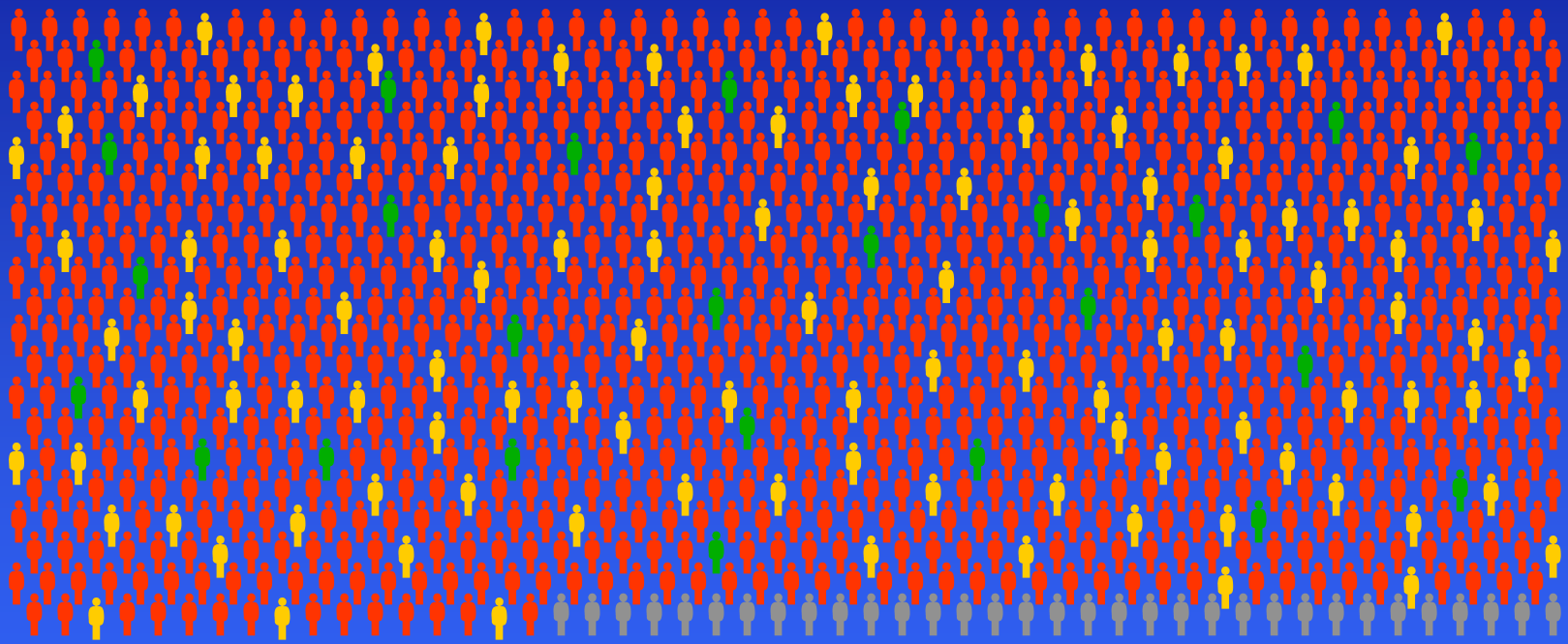
	%
• Ischaemic heart disease	13.7
• Cerebrovascular disease	9.5
• Lower respiratory infections	6.4
• HIV/AIDS	**4.2**
• COPD	4.2
• Diarrhoeal diseases	4.1
• Perinatal conditions	4.0
• Tuberculosis	2.8
• Lung Cancer	2.3
• Road traffic accidents	2.2

DALYs

	%
• Lower respiratory infections	6.7
• HIV/AIDS	**6.2**
• Perinatal conditions	6.2
• Diarrhoeal diseases	5.0
• Depression	4.1
• Ischaemic heart disease	4.1
• Cerebrovascular disease	**3.5**
• Malaria	3.1
• Road traffic accidents	2.8
• COPD	2.7

CHINA : Leading Causes of Death in Rural Areas, 1998

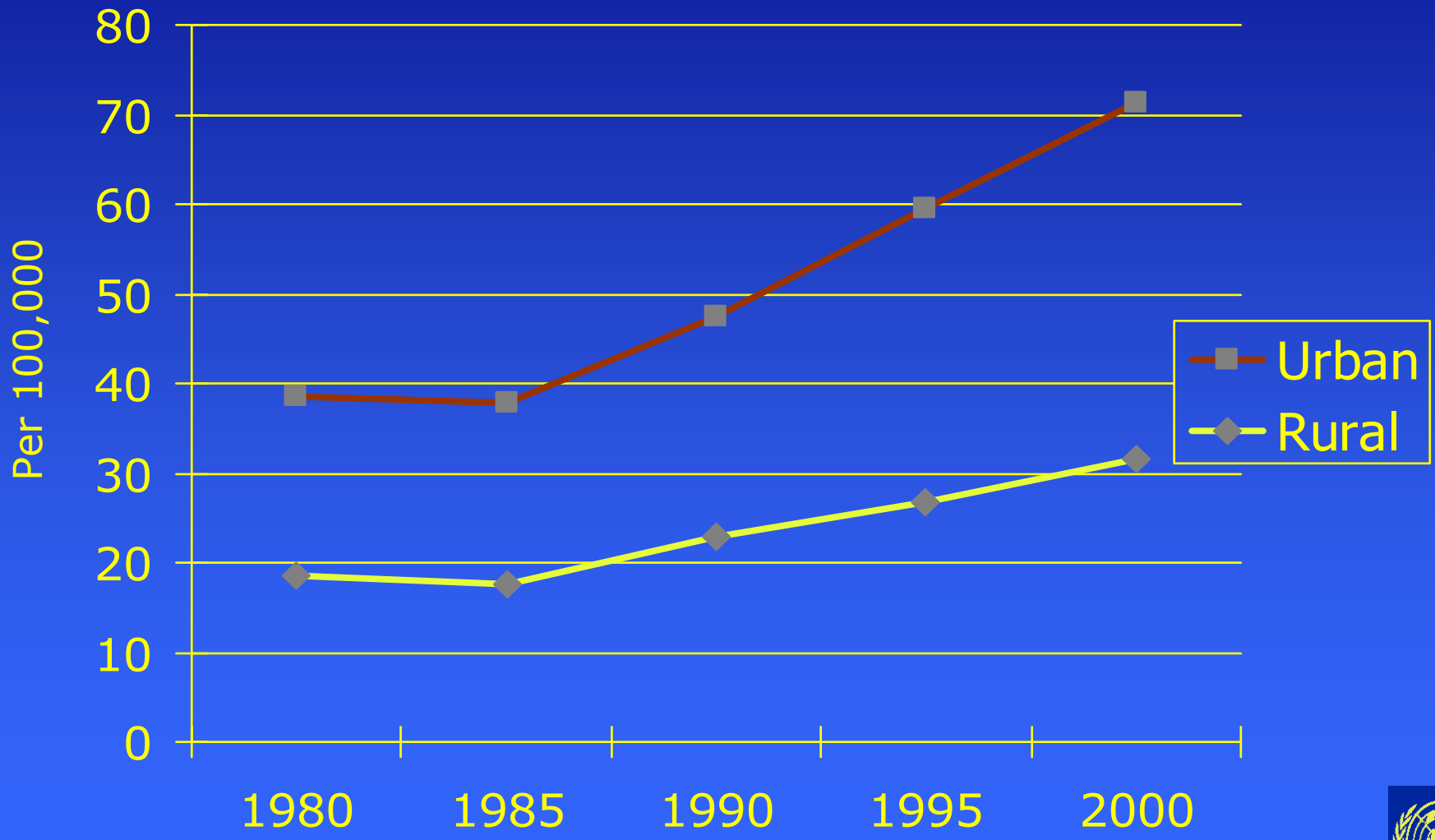
Rural Population: 813 million



- Communicable diseases (2.6%)
- Noncommunicable conditions (82.9%)
- Injuries (11.2%)
- Undiagnosed (3.3%)

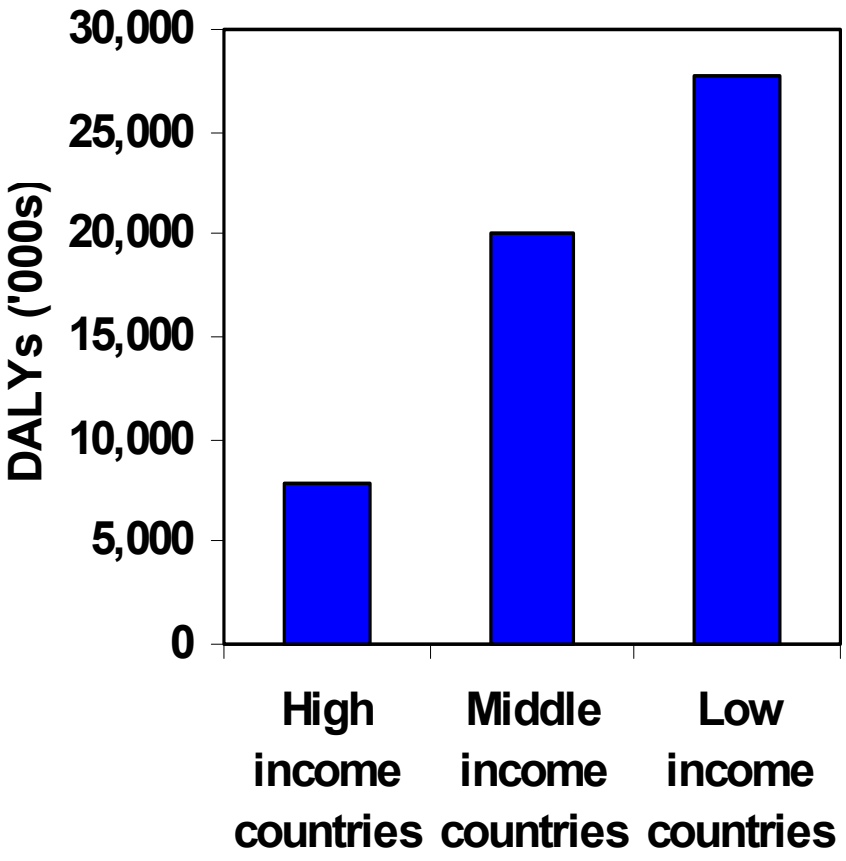
Source: Ministry of Health, China

Trends in CHD deaths in urban and rural China (age standardized)

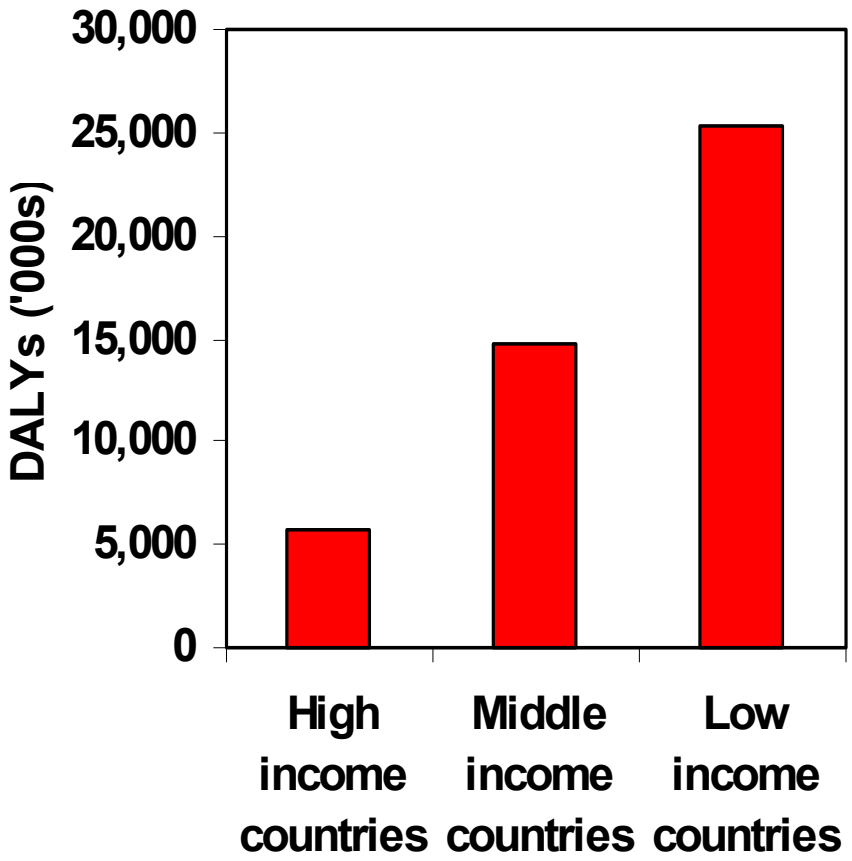


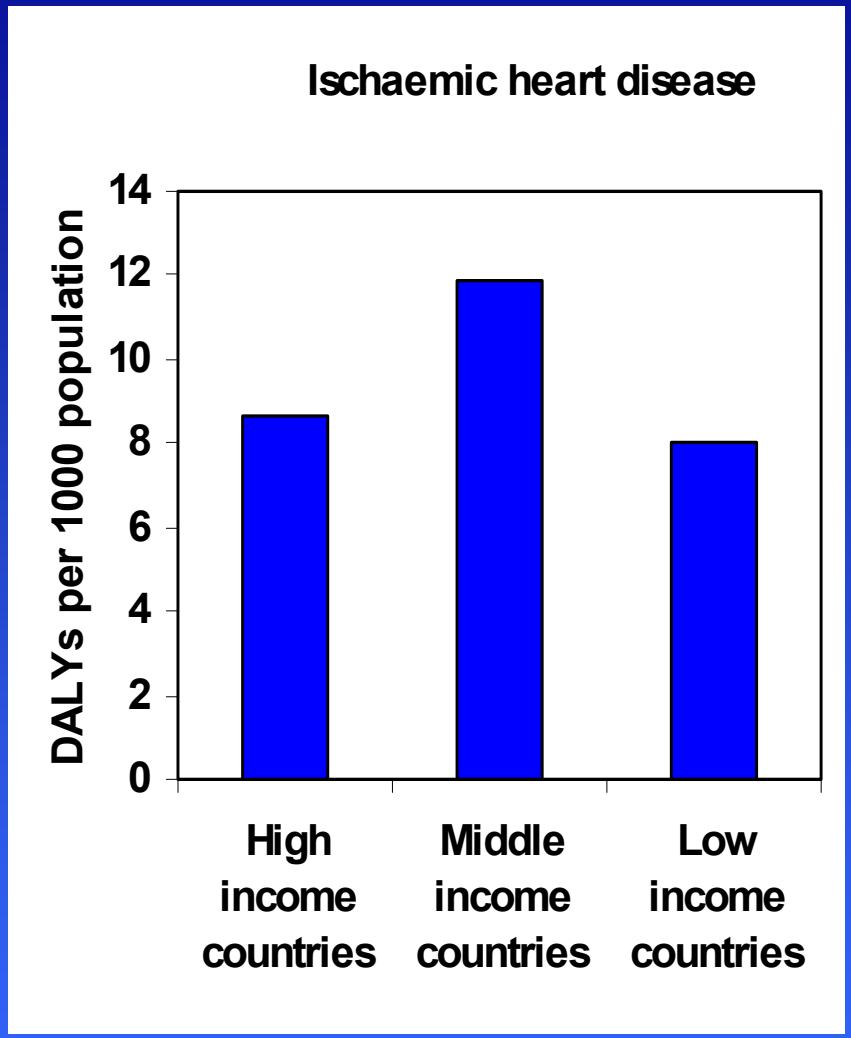
Source: Wu Xigui

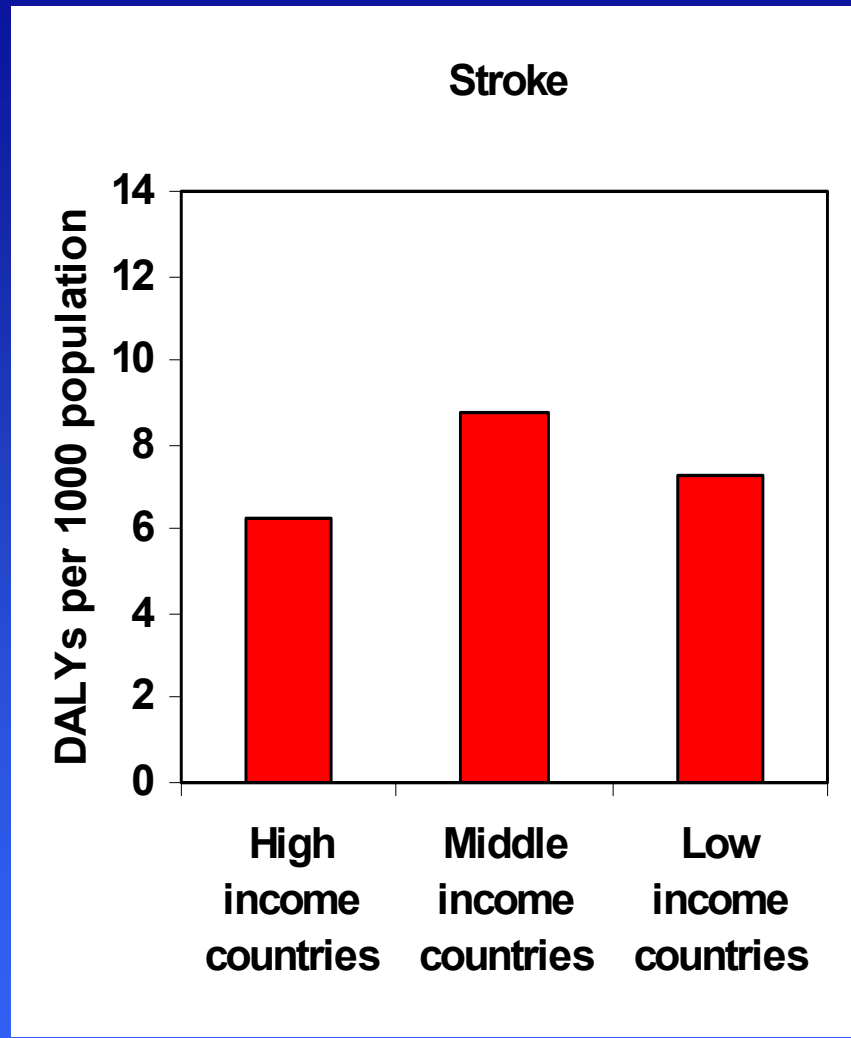
Ischaemic heart disease



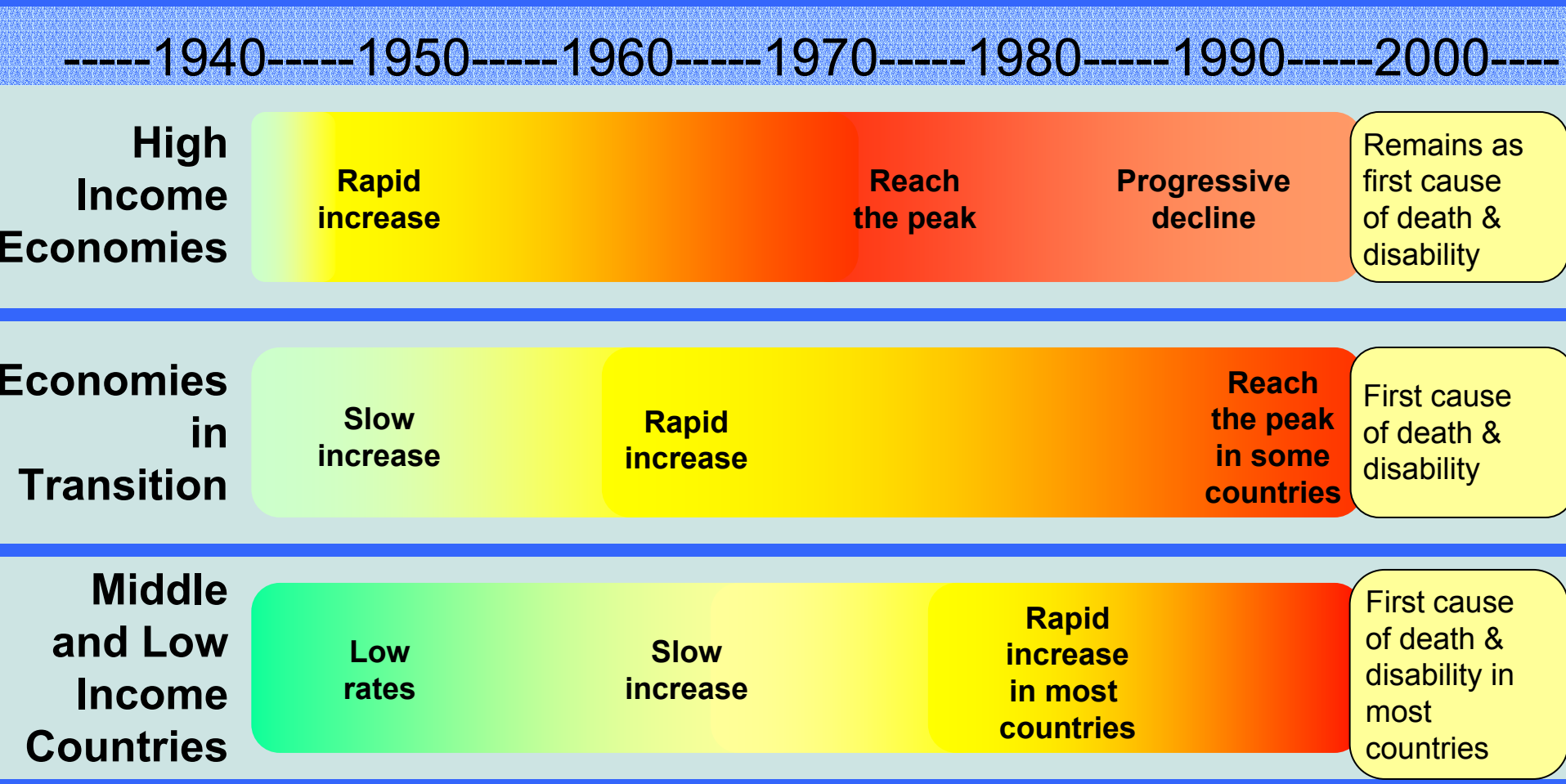
Stroke




Ischaemic heart disease
DALYs per 1000 population
0
2
4
6
8
10
12
14
High income countries
Middle income countries
Low income countries


Stroke
DALYs per 1000 population
0
2
4
6
8
10
12
14
High income countries
Middle income countries
Low income countries

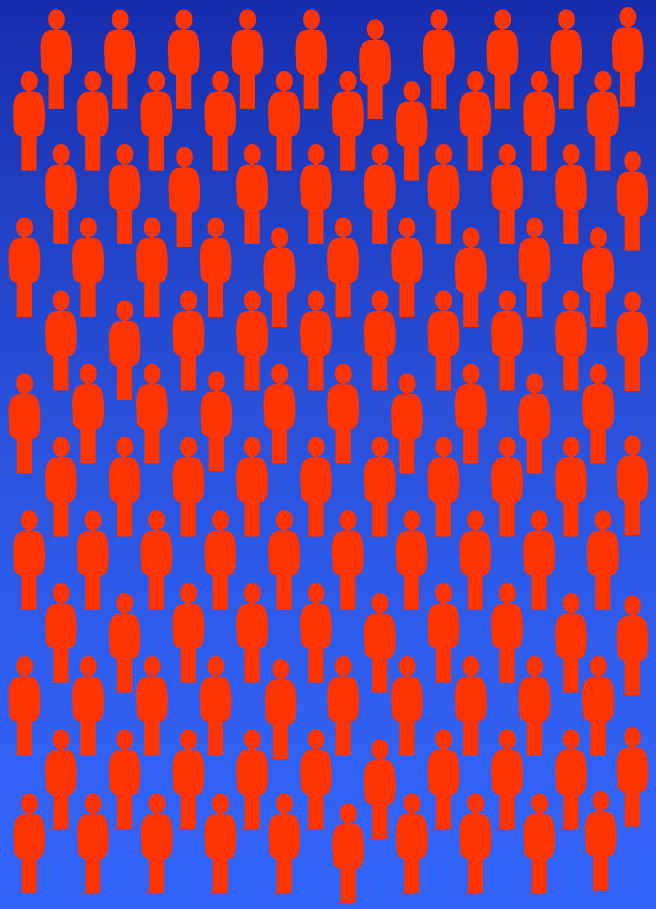
Cardiovascular (CVD) epidemic
in countries of different stages of development



Source: WHO, NMH/MNC

Heart Disease and Stroke
More than 12 million deaths each year

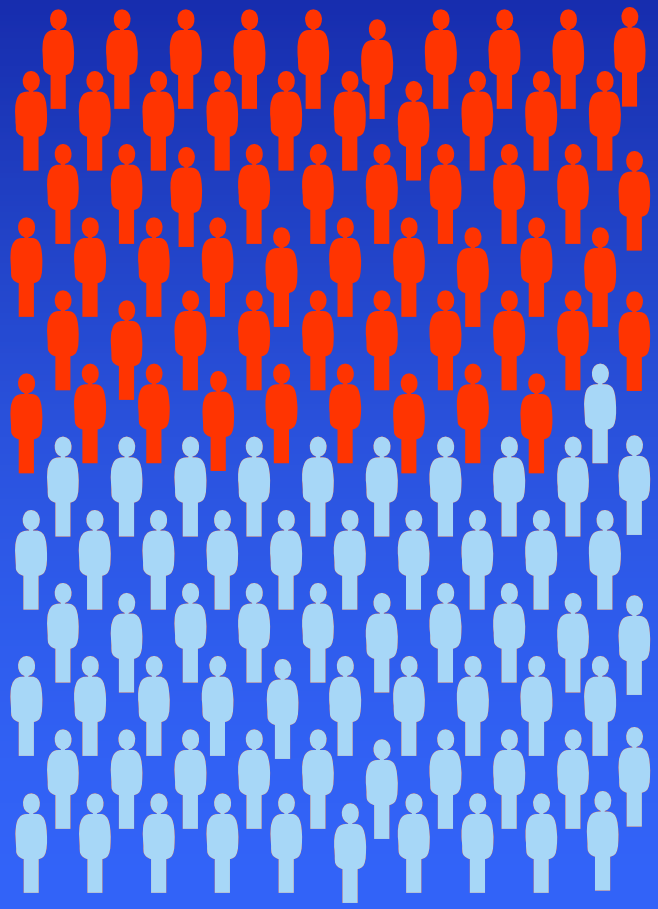
= 100,000 deaths



Source: WHR 2002

Heart Disease and Stroke

= 100,000 deaths



More than 50% of these deaths can be prevented by reducing major risk factors such as:

- **High blood pressure**
- **High cholesterol**
- **Low fruit and vegetable intake**
- **Tobacco use**
- **Obesity**
- **Physical inactivity**

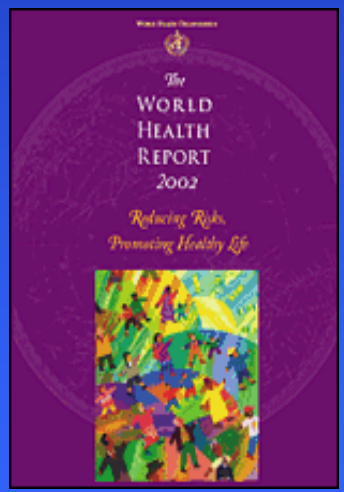
Source: WHR 2002

2002 World Health Report

"Reducing risks, promoting healthy life"

www.who.int/whr

www.thelancet.com



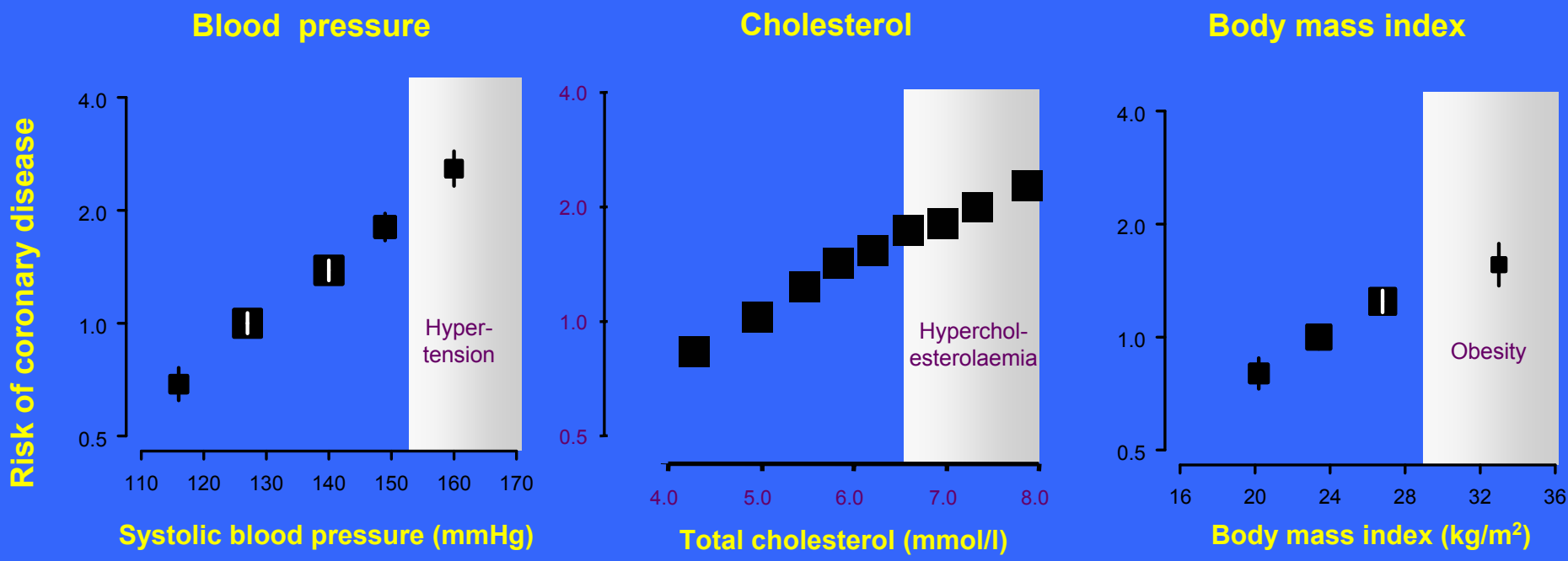
What is a risk?

“A probability of an adverse outcome or a factor that raises this probability”

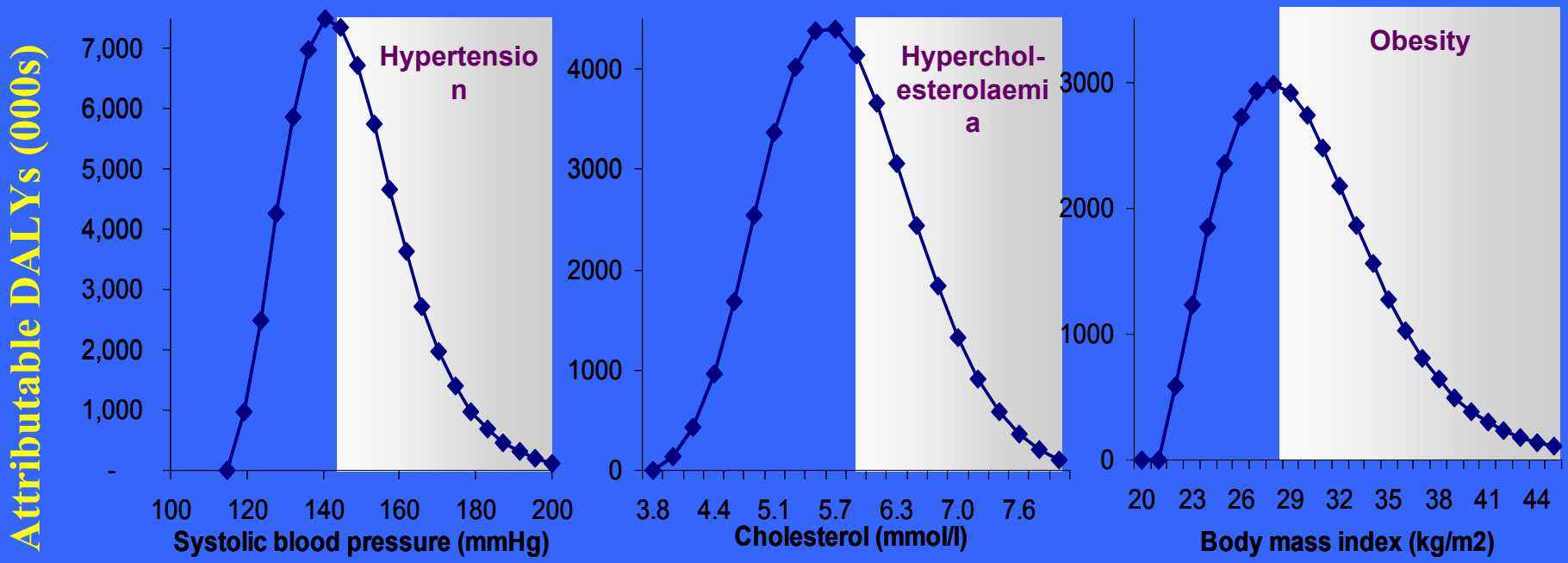
Criteria for choosing risk factors

- Likely to be among the leading causes of disease burden
- Not too specific or too broad
- High likelihood of causality
- Reasonably complete data
- Potentially modifiable

Continuous exposure and disease associations

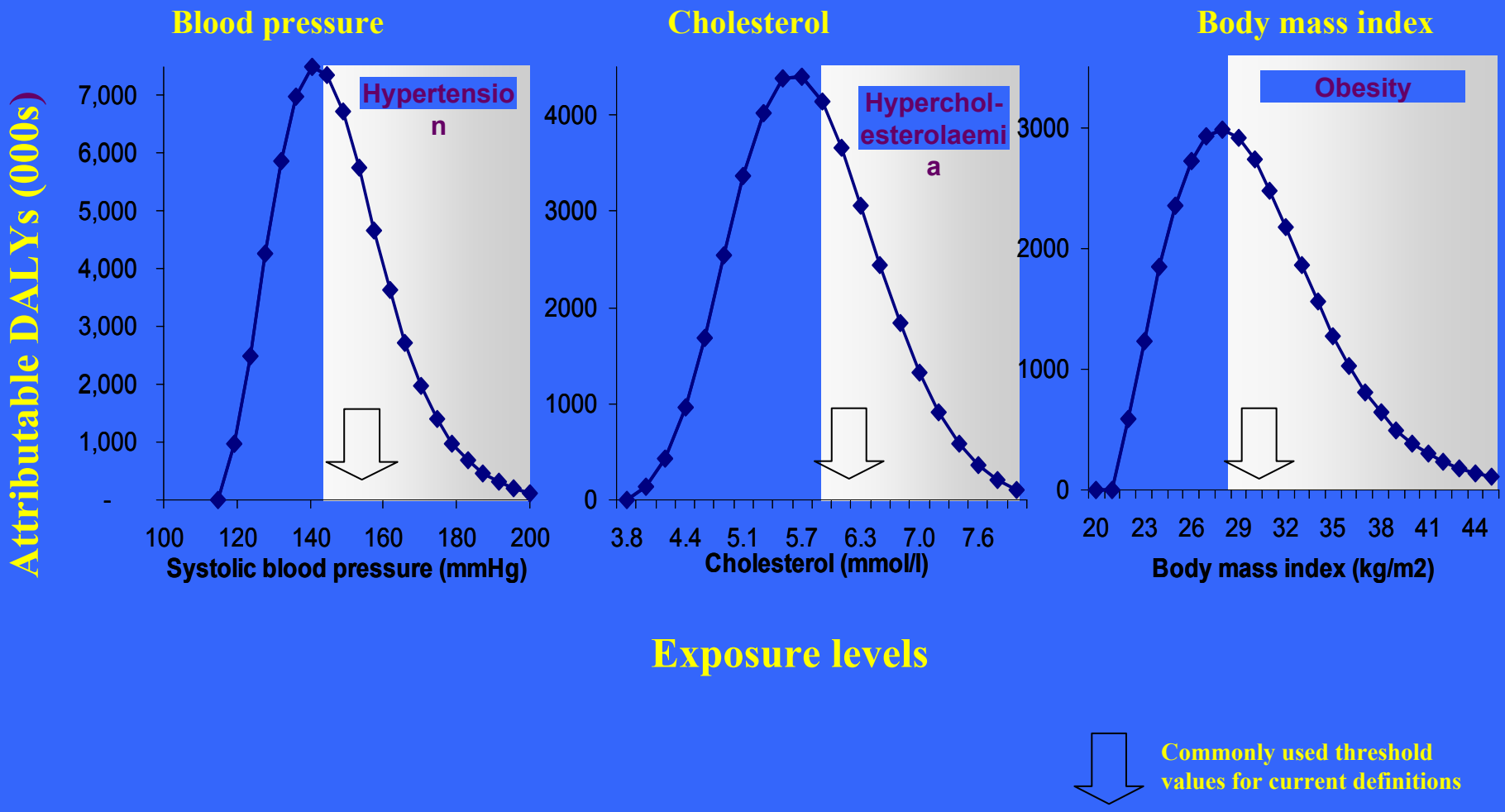


Distribution of attributable burden by exposure levels



Exposure levels

Distribution of attributable burden by exposure levels



Deaths attributable to leading risk factors, 2000

	Male (000)	Female (000)	Total (000)	%
Blood Pressure	3,491	3,649	7,141	12.8
Tobacco Use	3,893	1,014	4,907	8.8
Cholesterol	2,112	2,303	4,415	7.9
Underweight	1,900	1,848	3,748	6.7
Unsafe Sex	1,370	1,516	2,866	5.1
Low Fruit & Veg	1,449	1,277	2,726	4.9
Overweight	1,168	1,423	2,591	4.6
Physical Inactivity	961	961	1,922	3.4
Alcohol Consumption	1,638	166	1,804	3.2
Unsafe Water/Sanitation	895	835	1,730	3.1

Source: World Health Report 2002

DALYs attributable to leading risk factors, 2000

	Male (000)	Female (000)	Total (000)	%
Underweight	**69,733**	**68,067**	**137,801**	**9.6**
Unsafe Sex	**42,600**	**49,269**	**91,869**	**6.4**
Blood Pressure	**34,920**	**29,350**	**64,270**	**4.5**
Tobacco Use	**48,177**	**10,904**	**59,081**	**4.1**
Alcohol Consumption	**49,397**	**8,926**	**58,323**	**4.0**
Unsafe Water/Sanitation	**27,432**	**26,726**	**54,158**	**3.8**
Cholesterol	**22,136**	**18,301**	**40,437**	**2.8**
Overweight	**15,543**	**17,872**	**33,415**	**2.3**
Low Fruit & Veg	**15,117**	**11,544**	**26,662**	**1.9**
Physical Inactivity	**10,159**	**8,933**	**19,092**	**1.3**

Source: World Health Report 2002

WHR 2002: Immersed in a sea of risk

Leading 10 selected risk factors as causes of disease burden

= Major NCD risk factor

	Developing countries		Developed countries
	High Mortality	Low Mortality	
1	Underweight	Alcohol	Tobacco
2	Unsafe sex	Underweight	Blood pressure
3	Unsafe water	Blood pressure	Alcohol
4	Indoor smoke	Tobacco	Cholesterol
5	Zinc deficiency	Body mass index	Body mass index
6	Iron deficiency	Cholesterol	Low fruit & vegetable intake
7	Vitamin A deficiency	Iron deficiency	Physical inactivity
8	Blood pressure	Low fruit & vegetable intake	Illicit drugs
9	Tobacco	Indoor smoke from solid fuels	Underweight
10	Cholesterol	Unsafe water	Iron deficiency

Main message: NCD Risk Factors contribute to untimely deaths in all country settings

Risk factor \ *Condition*	*Cardiovas-cular Disease**	*Diabetes*	*Cancer*	*Chronic-obstructive pulmonary Disease*
Smoking	🗐	🗐	🗐	🗐
Alcohol	🗐		🗐	
Physical Inactivity	🗐	🗐	🗐	
Nutrition	🗐	🗐	🗐	
Obesity	🗐	🗐	🗐	🗐
Raised Blood pressure	🗐	🗐		
Dietary fat/Blood lipids	🗐	🗐	🗐	
Blood glucose	🗐	🗐	🗐	

* Including heart disease, stroke, hypertension

Summary

- Small number of risks cause a huge number of chronic disease deaths
- "Risk transition" is now occurring in many parts of the world---countries facing a 'double burden' of risks i.e. maternal conditions and communicable disease plus noncommunicable diseases
- Substantial decrease in burden of disease possible even with just moderate risk factor modification

WHO's response : An integrated approach to NCD surveillance and prevention

- Growing burden of NCD, MH and Injury
- Impact of globalisation, urbanisation
- Greater emphasis on prevention
- Need for standard, comparable data
- Greater focus on trends in major risk factors
- WHO framework for surveillance (STEPS)

A framework for Surveillance of major risk factors: a STEPwise approach

- Hierarchical framework
- Standard methods, definitions and protocols
- Common approach with core, expanded and optional items
- Adaptable to local settings and existing systems
- Guiding principle: Keep It Simple (KISS)!

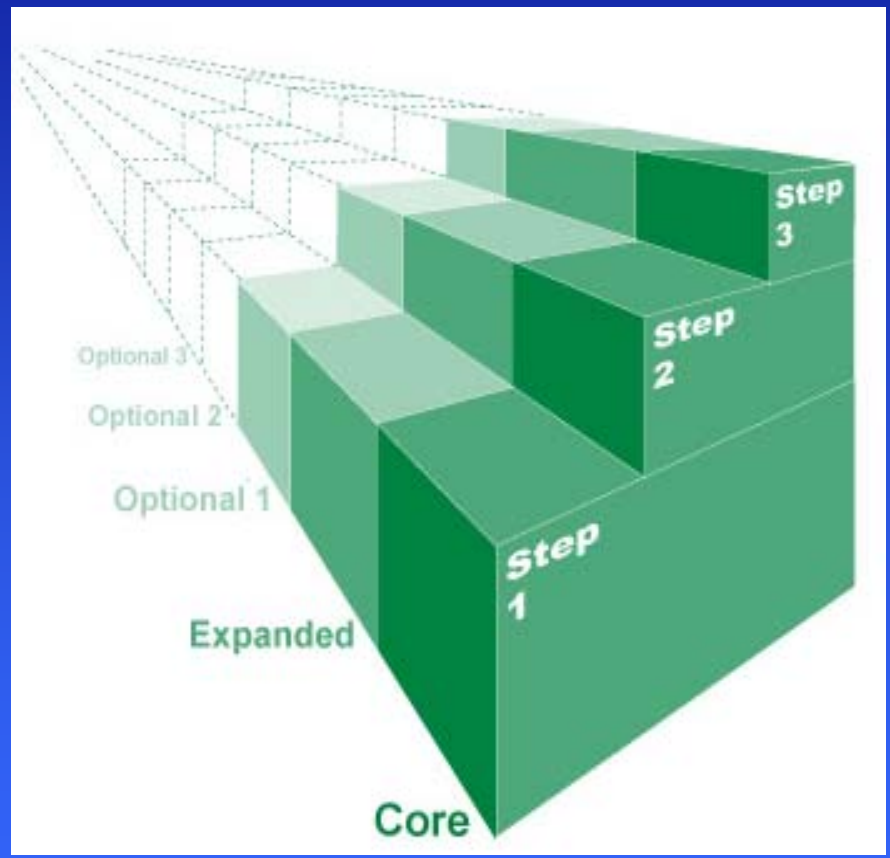
The WHO STEPwise approach: a framework for Surveillance of major NCD risk factors

Different levels of assessment

- **Behaviours**
- **Physical measurements**
- **Blood samples**

Three modules per risk factor:

- **core**
- **expanded core and**
- **optional.**



WHO STEPS - a tool for surveillance of major NCD risk factors

Step 1: Behaviors

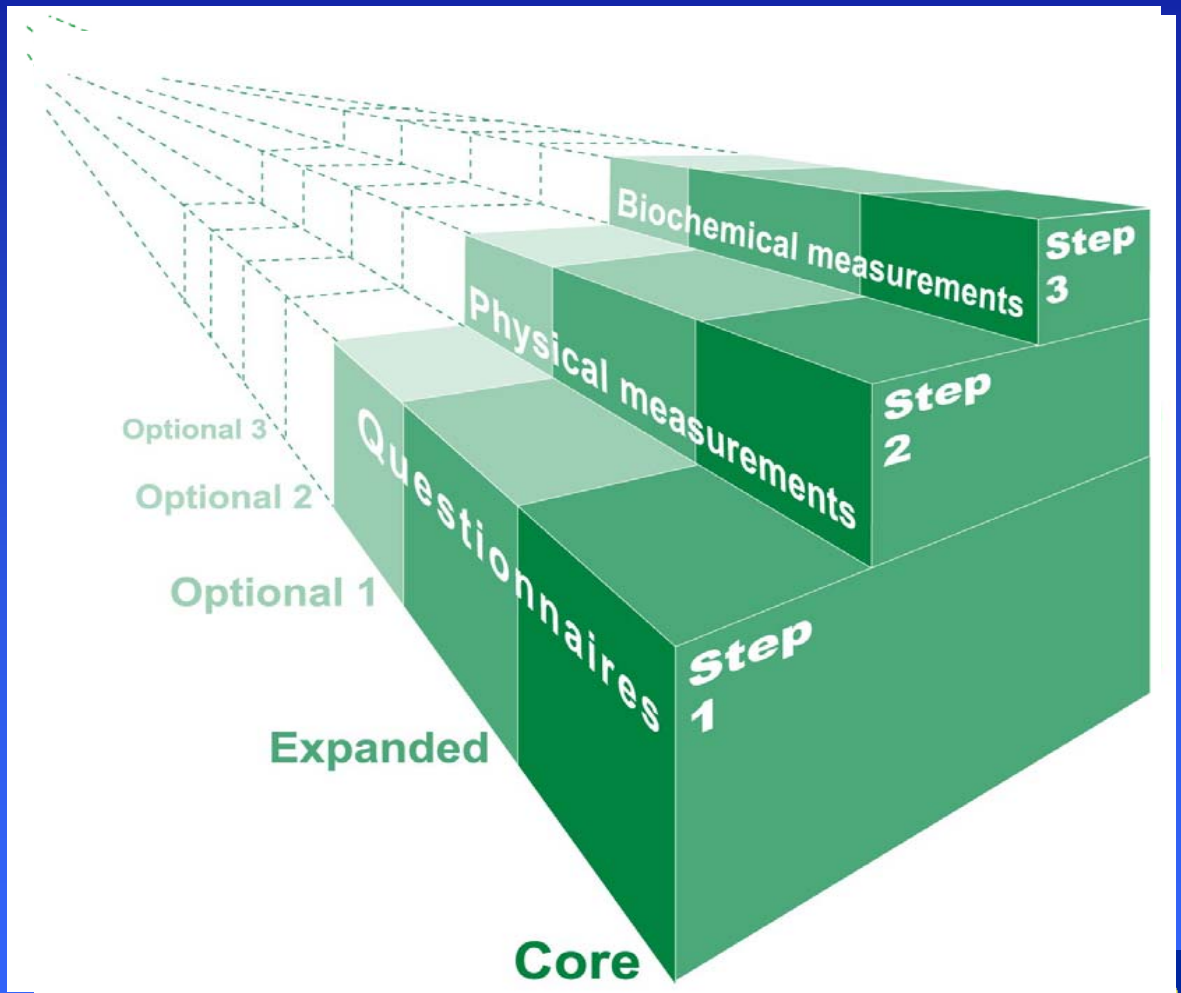
- Tobacco Use
- Physical Inactivity
- Intake fruit/veg
- Alcohol Use

Step 2: Physical measures

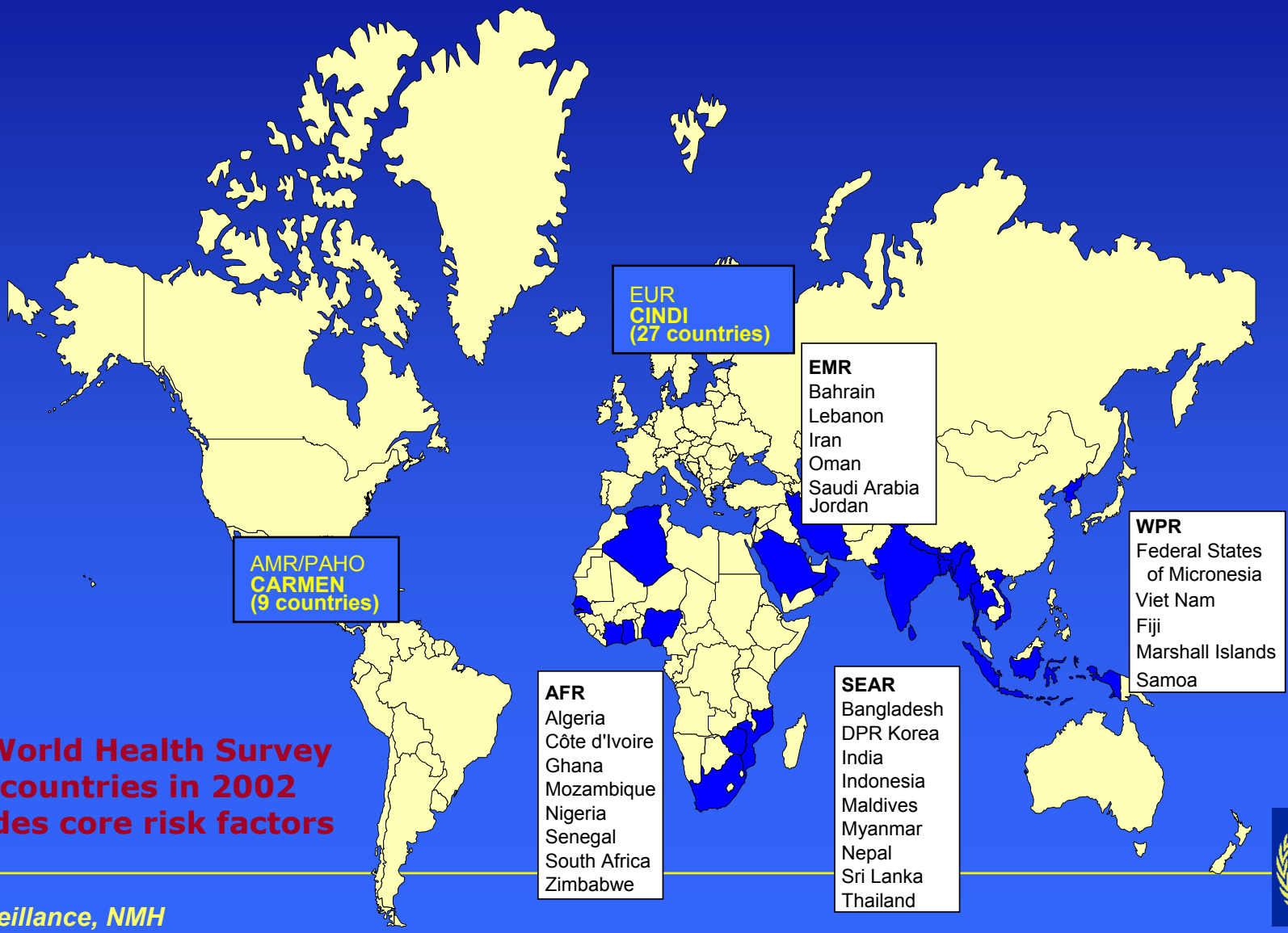
- Height /Weight
- Blood Pressure

Step 3: Blood samples

- Blood glucose/diabetes
- Cholesterol

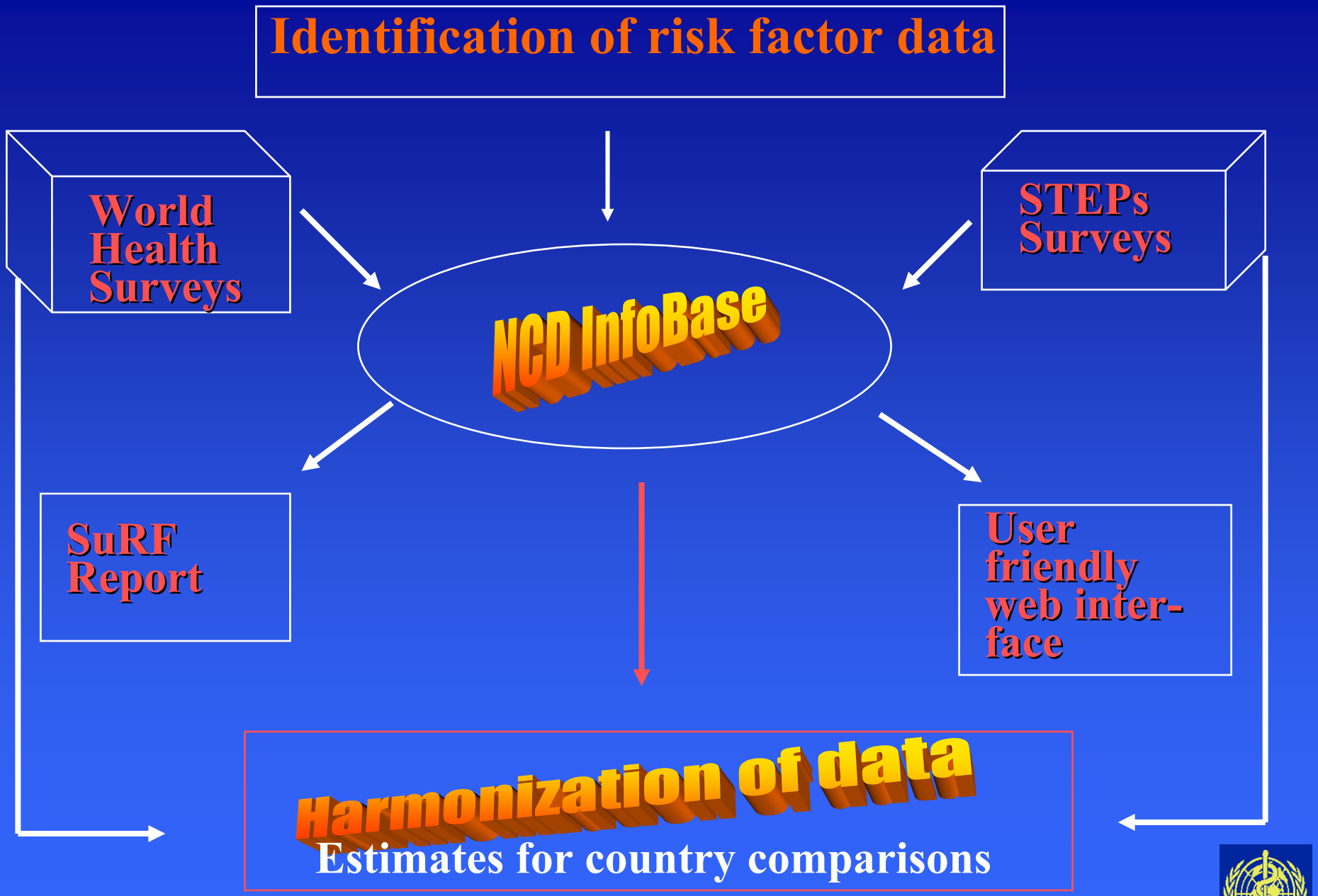


Capacity Building in Developing Countries through Regional Networks

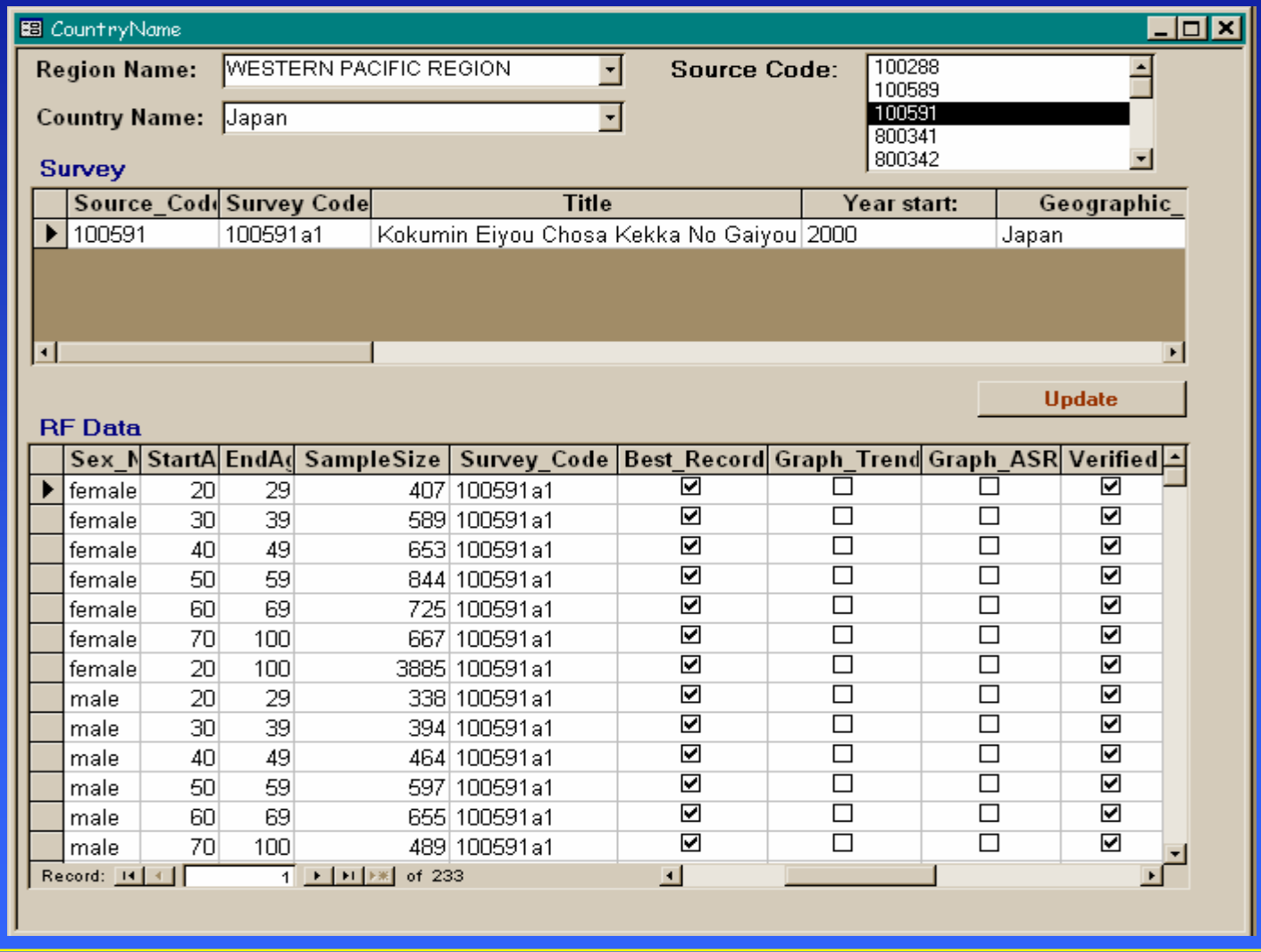


The World Health Survey
77 countries in 2002
includes core risk factors

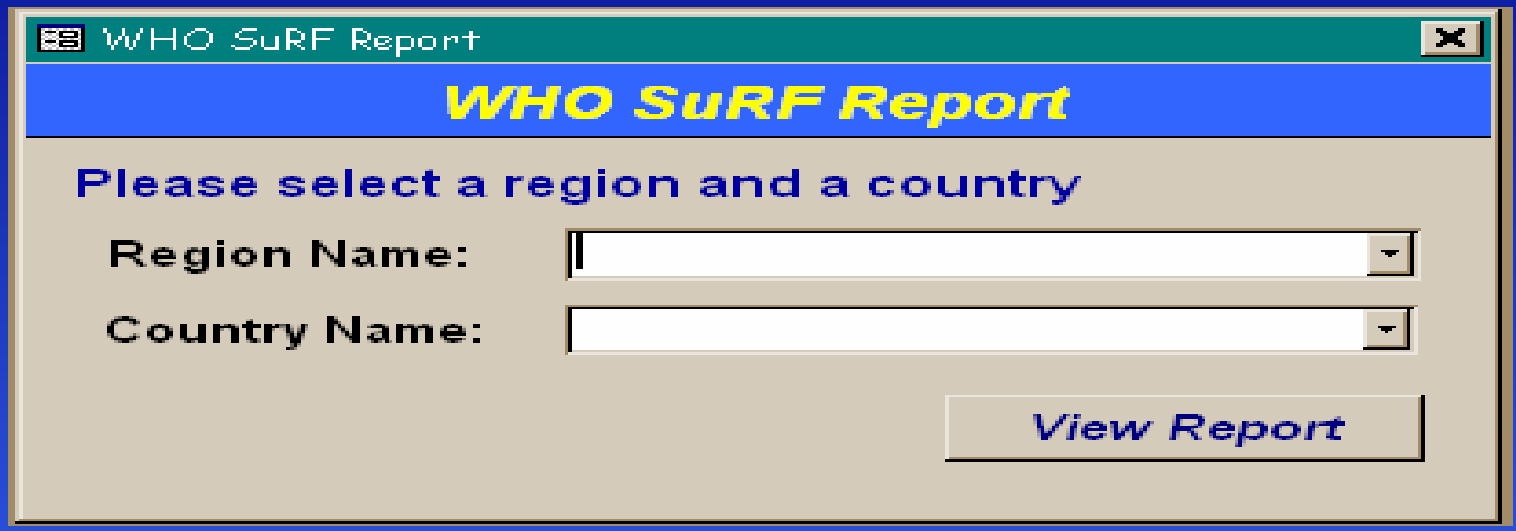
Surveillance, NMH


Identification of risk factor data
World Health Surveys
STEPs Surveys
NCD InfoBase
SuRF Report
User friendly web inter-face
Harmonization of data
Estimates for country comparisons

Identifying useful sources



Generating reports



Example

Japan

WESTERN PACIFIC REGION

General Information

	Males	Females
2000 Total Population	62,376,060	65,160,880
2020 Projected Population	60,898,580	65,059,020
2000 Average Life Expectancy (years)	77.5	84.7
Uncertainty Interval	77.4 - 77.7	84.4 - 85.1

Risk Factors

Tobacco use

Sex	Age Groups	n	Prevalence	95% CI
Current daily smoker				
male	20 - 29	337	60.8	
	30 - 39	394	56.6	
	40 - 49	463	55.1	
	50 - 59	597	54.1	
	60 - 69	656	37.0	
	= 70	490	29.4	
	= 20	2937	47.4	45.6-49.2
female	20 - 29	407	20.9	
	30 - 39	590	18.8	
	40 - 49	655	13.6	
	50 - 59	844	10.4	
	60 - 69	725	6.6	
	= 70	668	4.0	
	= 20	3889	11.5	10.5-12.5

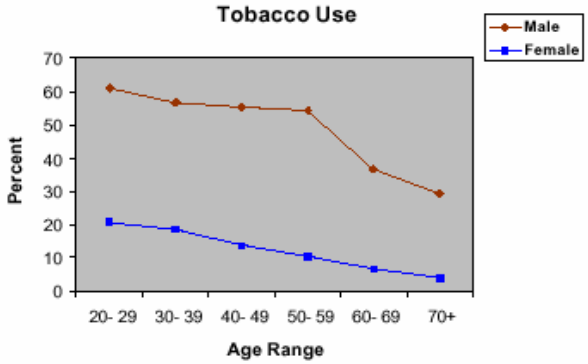
Survey Yea 2000 - 2000

Survey Population National; Japan

Source: Ministry of Health LaWJ; Kokumin Eiyou Chosa Kekka No GaiyouResults of National Nutrition Study 2001 Nov 8 ;

Japan

WESTERN PACIFIC REGION



Definition: Current daily smoker

Survey Population National; Japan

Source: Kokumin Eiyou Chosa Kekka No GaiyouResults of National Nutrition Study, 2001 Nov 8

WHO Global NCD Infobase

February 12, 2003

Conclusions

- Role of established risk factors greater than commonly thought
- In many world regions, the leading 5 risk factors account for more than one-third of mortality and one-quarter of DALYs
- Risks are widespread – all risk factors have global impact, and the burden of many occurs predominantly in developing countries

Conclusions

- Cause(s) known of more than two-thirds of many major diseases eg. ischaemic heart disease, stroke, diabetes
- Research agenda driven by need to identify and implement affordable, practical interventions
- Substantial and rapid improvements in overall healthy life expectancy are possible if:
  - major risks are targeted
  - population-wide changes are achieved