Preventive Medicine

Preventive Strategies for Population and Community Health

Zheng Pinpin

What does ‘being healthy’ mean to you?

Definition of Health

- **A state of complete physical, mental, and social well-being, and not merely the absence of disease and infirmity.**

WHO 1948

Definition of Health

- **Criticism:**

1. **It is totally unrealistic and idealistic (how often is anyone truly feel in a state of ' complete...well-being'?)**
2. **It implies a static position, whereas life and living are anything but static.**
3. **It appears to assume that someone, somewhere, has the ability and right to define a state of health, whereas we have seen that people define health in many way.**

Six dimensions of Health

- Physical Health

  ✓Mechanical functioning of the body

- Mental Health

  ✓The ability to think clearly and coherently

- Emotional Health

  ✓The ability to recognize emotions such as fear, joy, grief and anger and to express such emotions appropriately, to cope with stress, tension, depression and anxiety.

Six dimensions of Health (cont'd)

Social Health

✓The ability to make and maintain relationships with other people.

Spiritual Health

✓Religious beliefs or personal creeds, principles of behavior and ways of achieving peace of mind and being at peace with oneself

Societal Health

✓ A person's health is related to everything surrounding that person. It is impossible to be healthy in a 'sick ' society that does not provide the resources for basic physical and emotional needs.

The Dimensions of Health and the Wellness Continuum

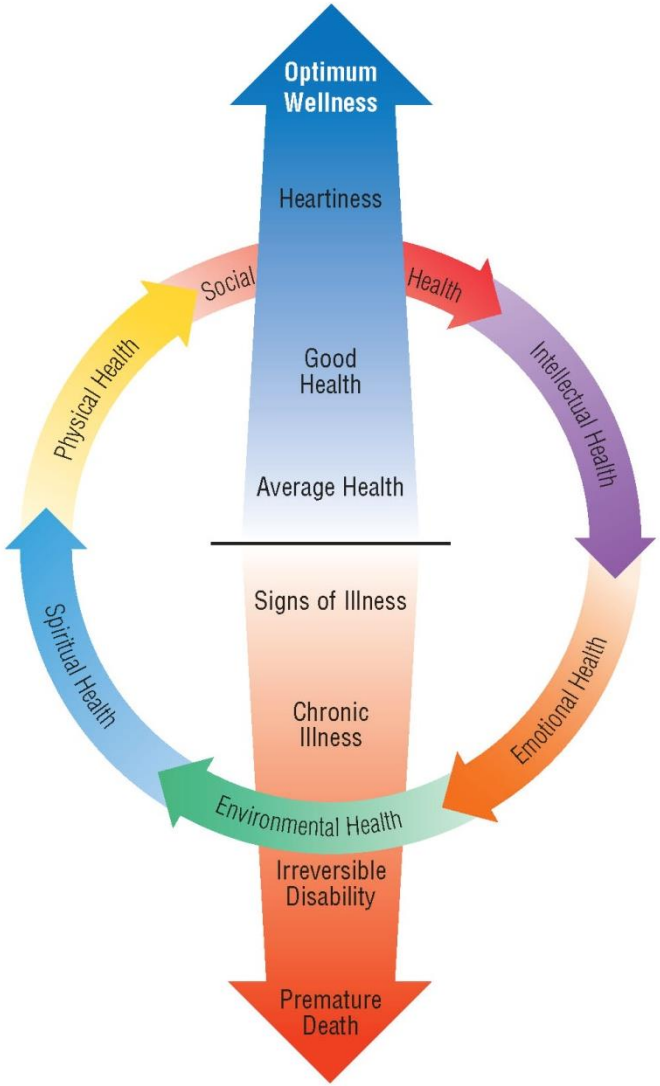


Figure 1.1

2008-2013 Action Plan for the Global Strategy for the Prevention and Control of Noncommunicable Diseases

Working in partnership to prevent and control the 4 noncommunicable diseases — cardiovascular diseases, diabetes, cancers and chronic respiratory diseases

the 4 shared risk factors — tobacco use, physical inactivity, unhealthy diets and the harmful use of alcohol.

World Health Organization

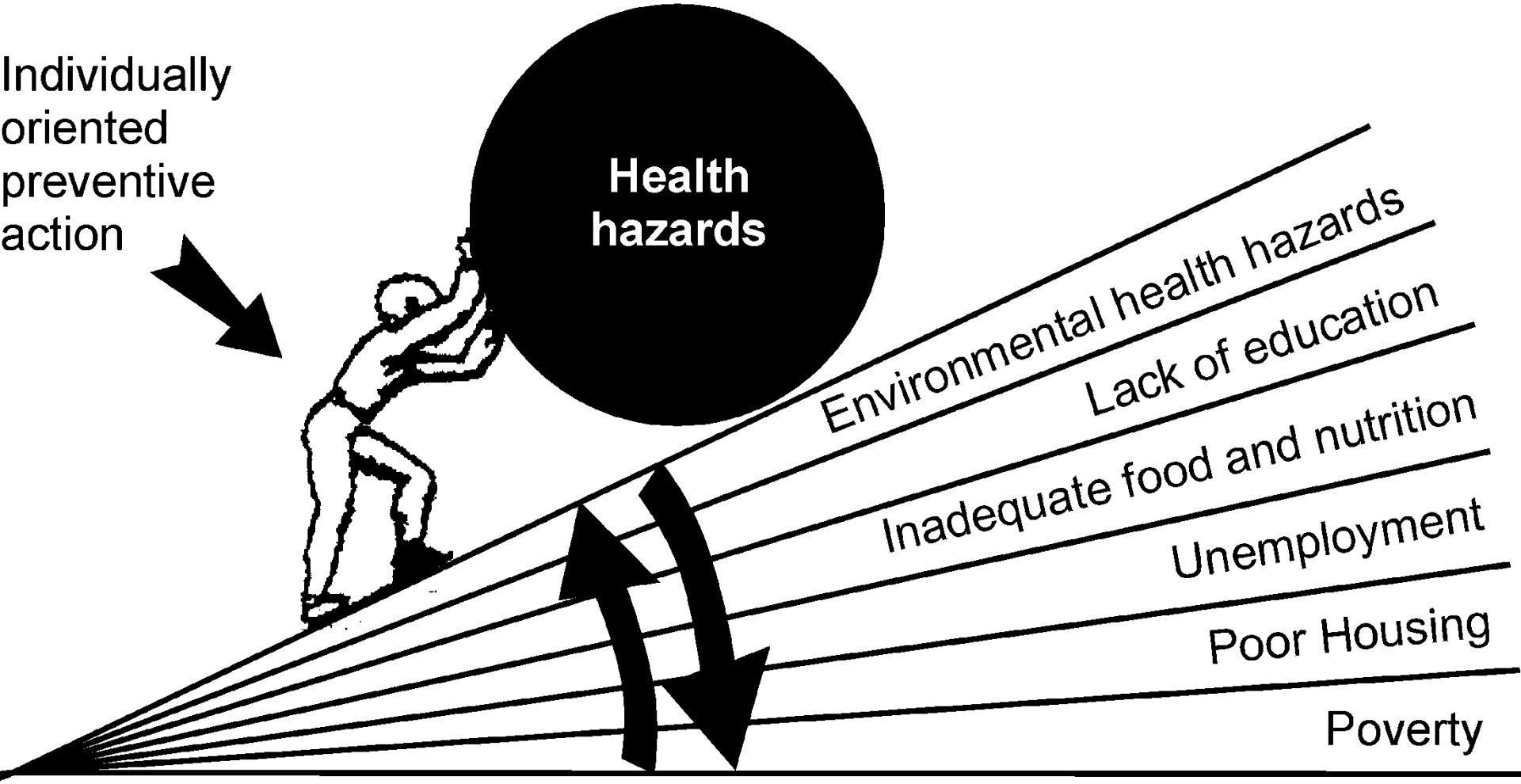
Ten Leading Risk Factors for Preventable Disease

- Maternal and child underweight
- Unsafe sex
- High blood pressure
- Tobacco
- Alcohol
- Unsafe water, poor sanitation, and hygiene
- High cholesterol
- Indoor smoke from solid fuels
- Iron deficiency
- High body mass index or overweight

Source: WHO, *World Health Report 2002: Reducing Risk, Promoting Healthy Life* (Geneva: WHO, 2002), accessed online at www.who.int, on Nov. 15, 2004.

What are the determinants of health related behaviour?

The Health Gradient

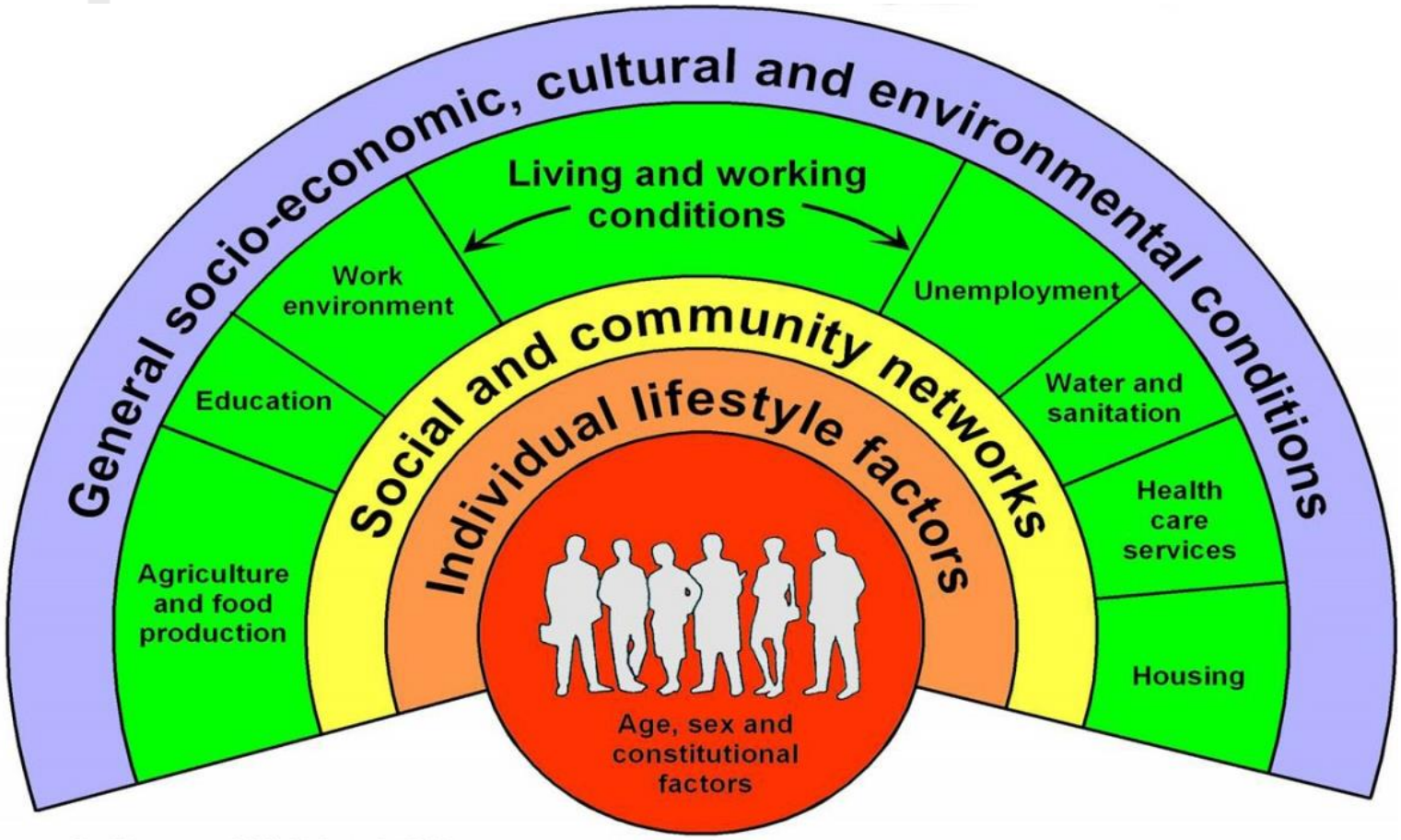


Source: adapted from Making Partners: intersectoral action for health.

Ten main social determinants of health

1. The social gradient
2. Stress
3. Early life
4. Social exclusion
5. Work
6. Unemployment
7. Social support
8. Addiction
9. Food
10. Transport

Socio-Ecological Model of Health (Policy Rainbow)



Source: Dahlgren and Whitehead, 1991

Case Study 1

The experience of Eastern Europe

- Countries such as Poland, Hungary, Bulgaria, and Russia experienced steady improvements in life expectancy after World War II.

- In Russia life expectancy has fallen from 65 years in 1987 to 59 years in 1993.

Case Study 2

Economic growth and prosperity

Japan

- Between 1965 and 1990 it leaped ahead of all other industrialized countries despite increased dietary fat and increased smoking rates.
- Life expectancy was 63.6 years for males and 67.8 years for females in 1955
- By 1991 it had increased to 76.1 for males and 82.1 years for females.

What is a 'Social Determinant of Health'?

Example:
The gender difference in Insomnia

Four "Lenses" of Analysis

I. Biomedical Lens-

Physiological differences between man and women. E.g. hot flashes in perimenopausal women; influenced of female sex hormones on GABAergic neurons

Four "Lenses" of Analysis

1. Biomedical Lens-

2. Psychological Lens-

Psychological differences between man and women in reporting symptoms.

Four "Lenses" of Analysis

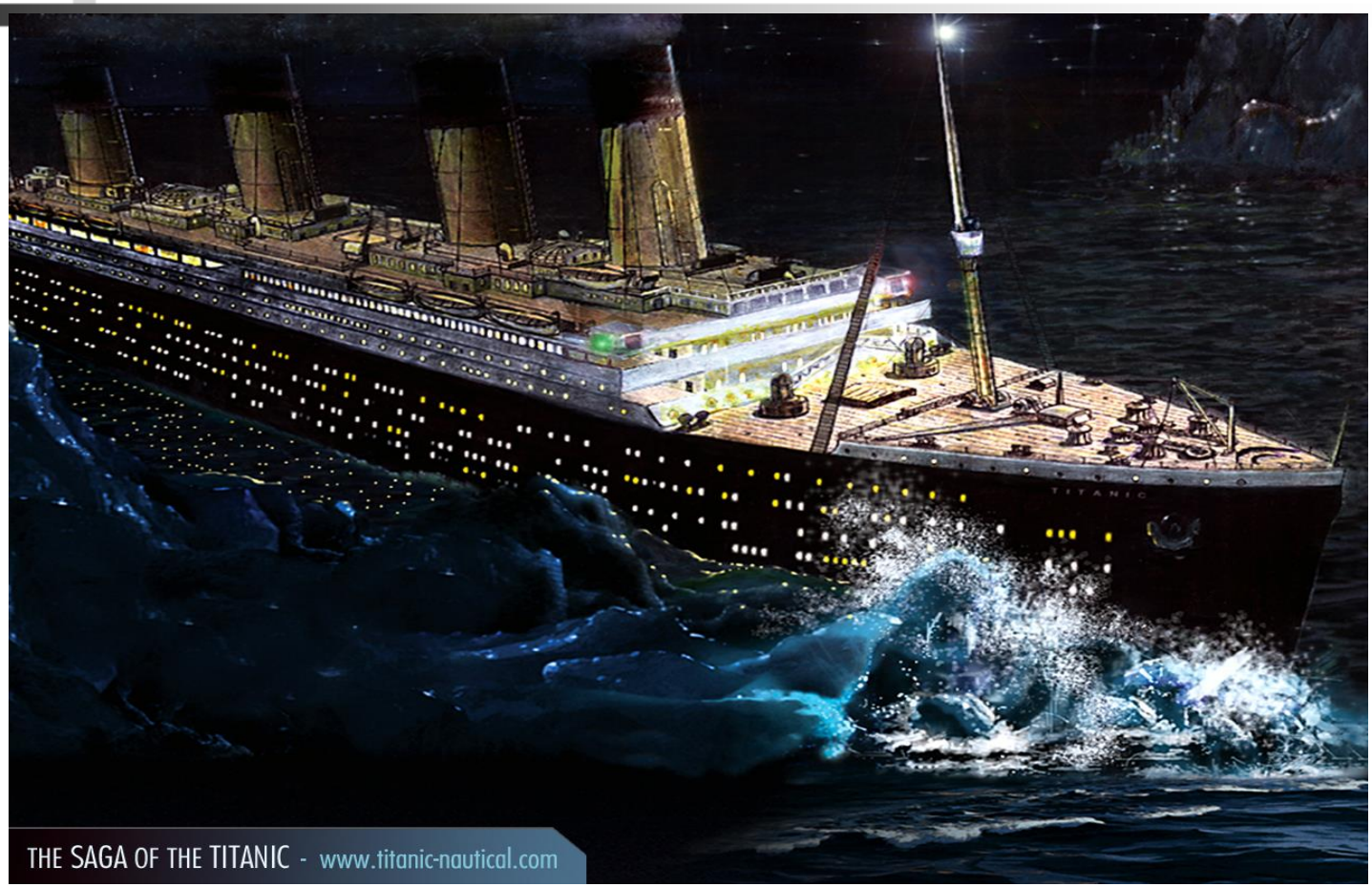
1. Biomedical Lens-
2. Psychological Lens-
3. Epidemiological Lens-

Gender differences in the distribution of "risk factors", e.g. depression, exercise, tea/ alcohol intake.

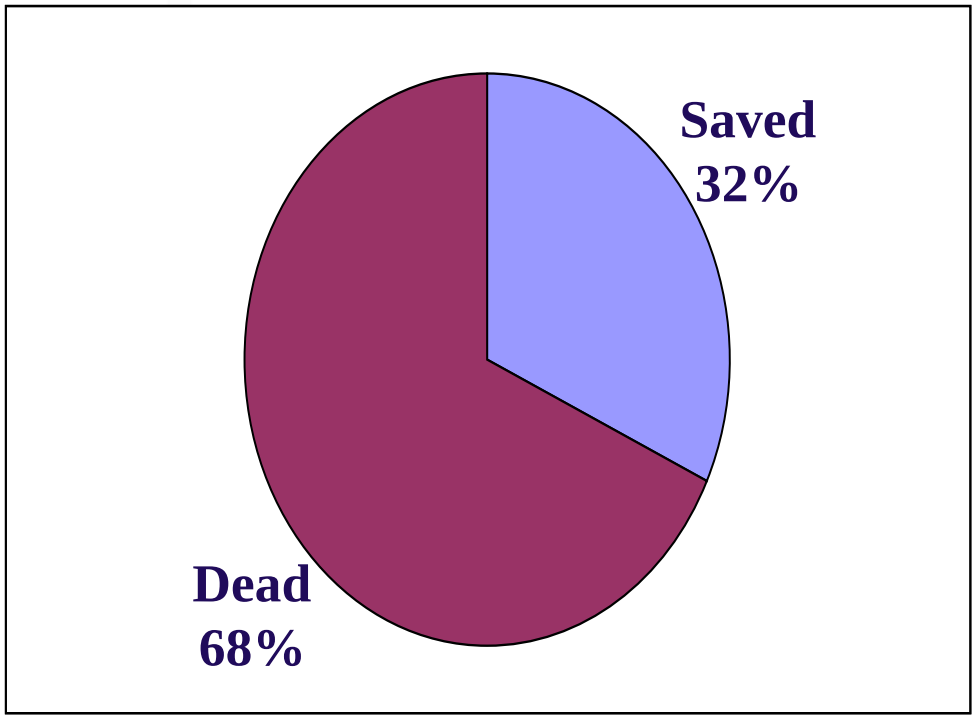
Four "Lenses" of Analysis

1. Biomedical Lens-
2. Psychological Lens-
3. Epidemiological Lens-
4. Society and Health Lens-

Gender differences in the division of household labor, e.g. time use differences based on 'double shift' among women.


THE SAGA OF THE TITANIC - www.titanic-nautical.com

Titanic Casualties



Total on Board: 2,223

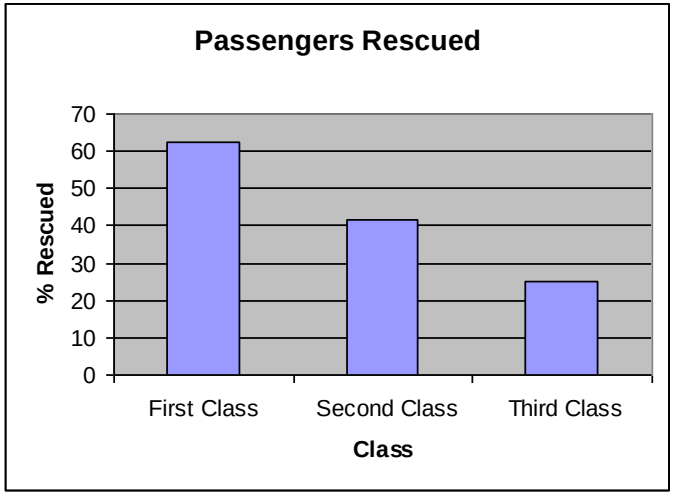
Lifeboat Capacity:1,178

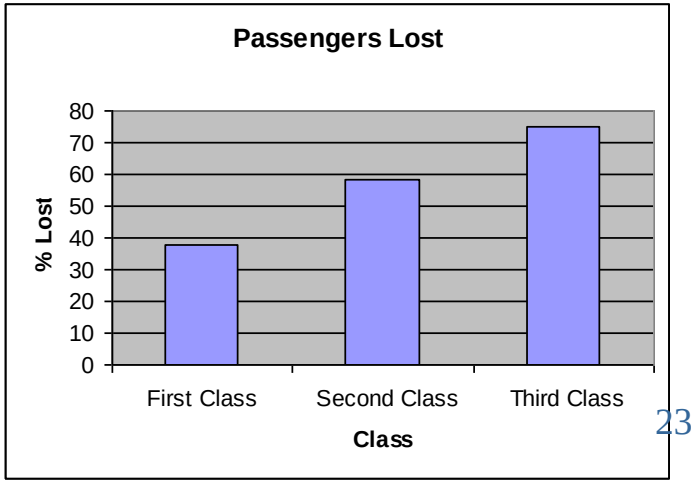
Total Deaths: 1,517

Passengers Rescued

*The highest percentage of passengers
rescued were from first class.

*The highest percentage of passengers
lost were from third class.





What was there a social class gradient in mortality on the Titanic?

- Confounding by age and sex of passengers in different sections of the boat.

Mortality on board Titanic, by Gender and Class

Class	Men	Women/Children
First	67.4%	2.7%
Second	91.7%	11.2%
Third	83.8%	57.8%

What was there a social class gradient in mortality on the Titanic?

- Confounding by age and sex of passengers in different sections of the boat.
- Upper class people were more fit (or better swimmers), and quicker to respond instructions of the crew (Social Selection).

What Explains Social-economic Inequalities in Health?

Personal Responsibility

Structural Constraints

The standard economic model of smoking

"Fully informed, forward-looking, rational consumers make the decision to smoke after weighing the benefits of smoking (enjoyment) against the costs."

Targets of Intervention

Personal responsibility	Structural constraints
•Increase intrinsic motivation to quit •Build self-efficacy •Modifying beliefs about benefits and cots of behavior •Enhance skills needed to quit	

The Social Context of smoking among Low Income populations

Characteristics of Social Environment	The smoking response
•High stress •Few economic resources •Social norms support smoking •Causes illness/death in short term	Relieve stress Inexpensive Provides social connection Causes death in long run

Social Inequalities in Smoking-policy Response

Causes of smoking in Low-income Groups	The smoking response
•Inexpensive •Social norms support smoking •Environment causes illness/death in short run	•Make nicotine replacement therapy more affordable •De-normalize smoking, e.g. indoor smoking restrictions •Improve expectations of long-term health

Traditional Ten Tips For Better Health

1. Don't smoke. If you can, stop. If you can't, cut down.
2. Follow a balanced diet with plenty of fruit and vegetables.
3. Keep physically active.
4. Manage stress by, for example, talking things through and making time to relax.
5. If you drink alcohol, do so in moderation.
6. Cover up in the sun, and protect children from sunburn.
7. Practice safer sex.
8. Take up cancer screening opportunities.
9. Be safe on the roads: follow the Highway Code.
10. Learn the First Aid ABC : airways, breathing, circulation.

Source: Donaldson, 1999

An Alternative Ten Tips for Better Health

1. Don't be poor. If you can, stop. If you can't, try not to be poor for long.
2. Don't have poor parents.
3. Own a car.
4. Don't work in a stressful, low paid manual job.
5. Don't live in damp, low quality housing.
6. Be able to afford to go on a foreign holiday and sunbathe.
7. Practice not losing your job and don't become unemployed.
8. Take up all benefits you are entitled to, if you are unemployed, retired or sick or disabled.
9. Don't live next to a busy major road or near a polluting factory.
10. Learn how to fill in the complex housing benefit/ asylum application forms before you become homeless and destitute.

Source: Gordon, 1998

Different Questions

Traditional Epidemiology	Social Epidemiology
•Why did this individual get sick? •What can I do to avoid disease?	•Why is this population healthy? •What can society do to improve health?

The Prevention Paradox and the strategies of Prevention

Relationship between DBP and Stroke

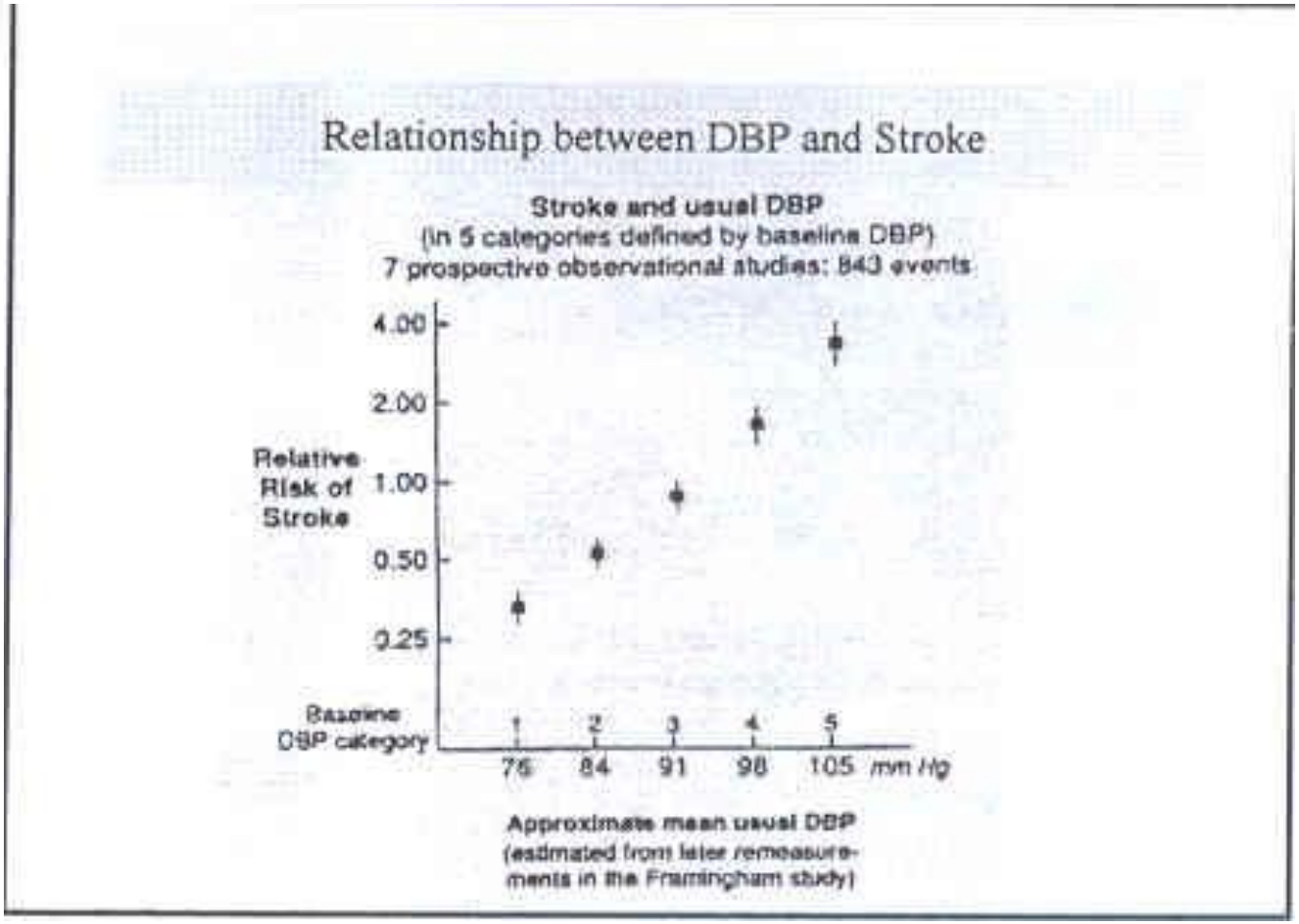
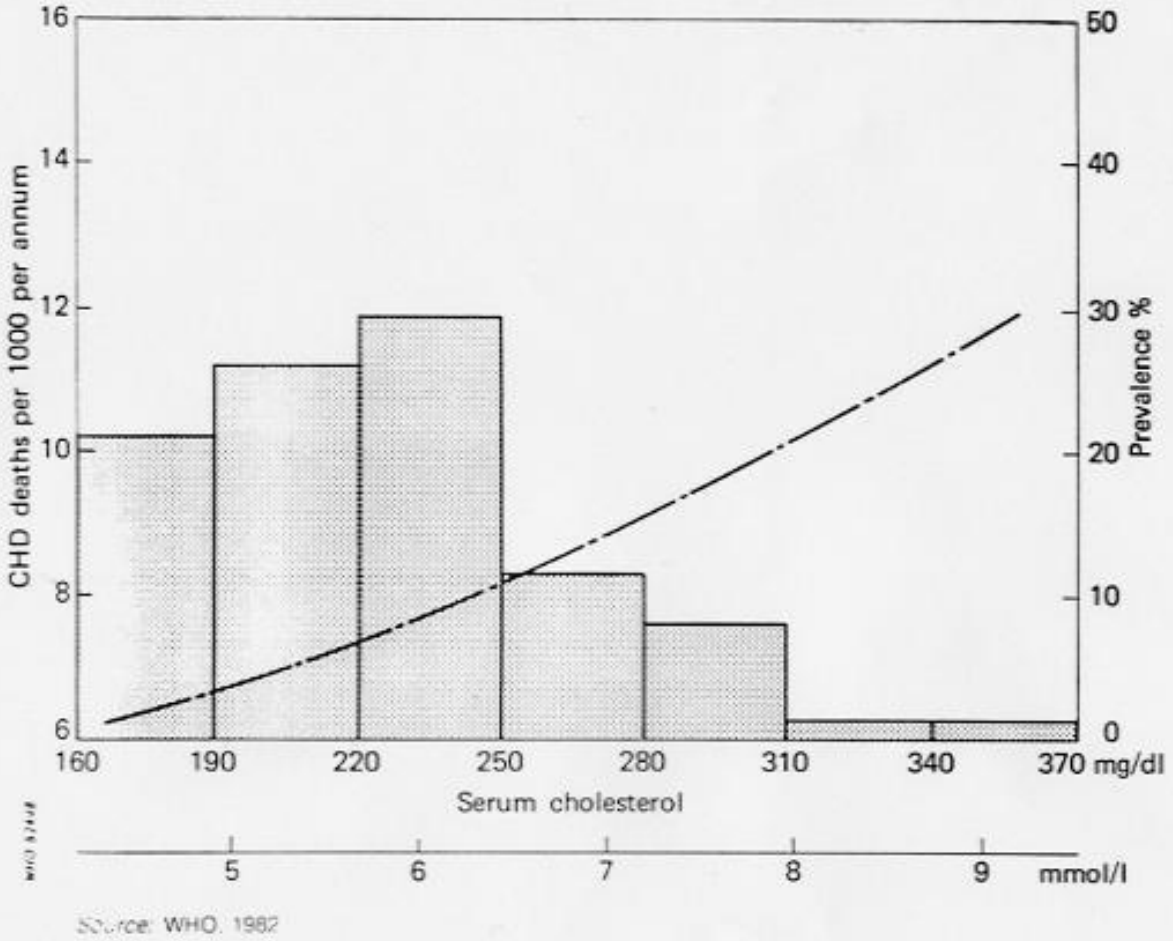


Fig. 6.5. Relationship between serum cholesterol (histogram) and mortality from coronary heart disease (interrupted line) in men aged 55–64 years



Source: WHO, 1982

High risk strategy

The high-risk strategy is derived from a one-on-one consultation or screening.

Its advantages are:

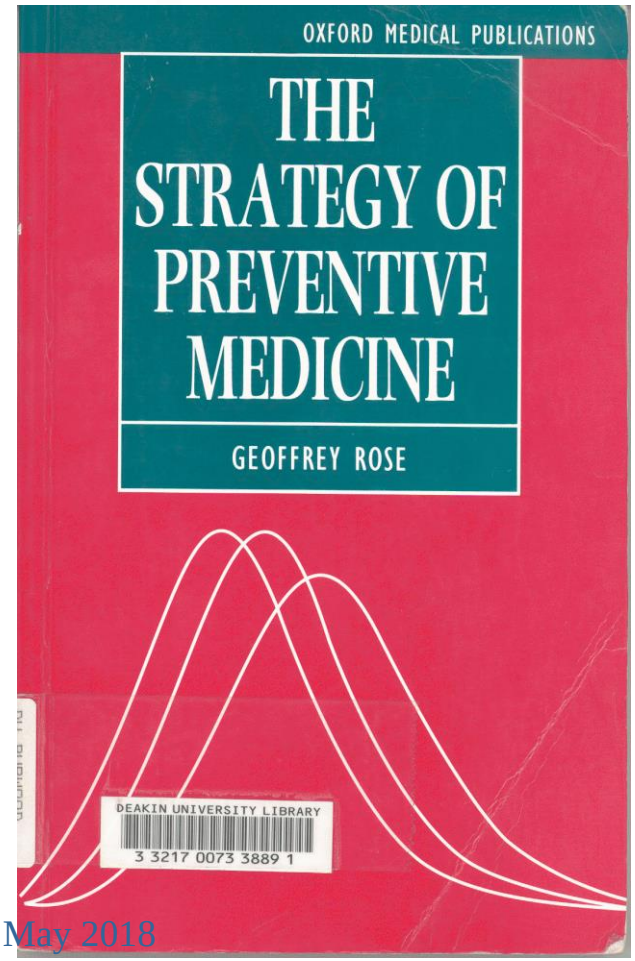
- it is appropriate to the individual
- the subject is motivated
- the “mystique of science” is applied
- it may be cost- effective

Disadvantages of the high- risk approach

Note some of the problems:

- the difficulties and costs of screening
- doesn't attack causes – so it is palliative, not radical
- predictive power is poor
- is often behaviorally inappropriate
- is difficult to sustain, control, finance and evaluate
- the contribution to overall control of a disease is small

Rose's Message

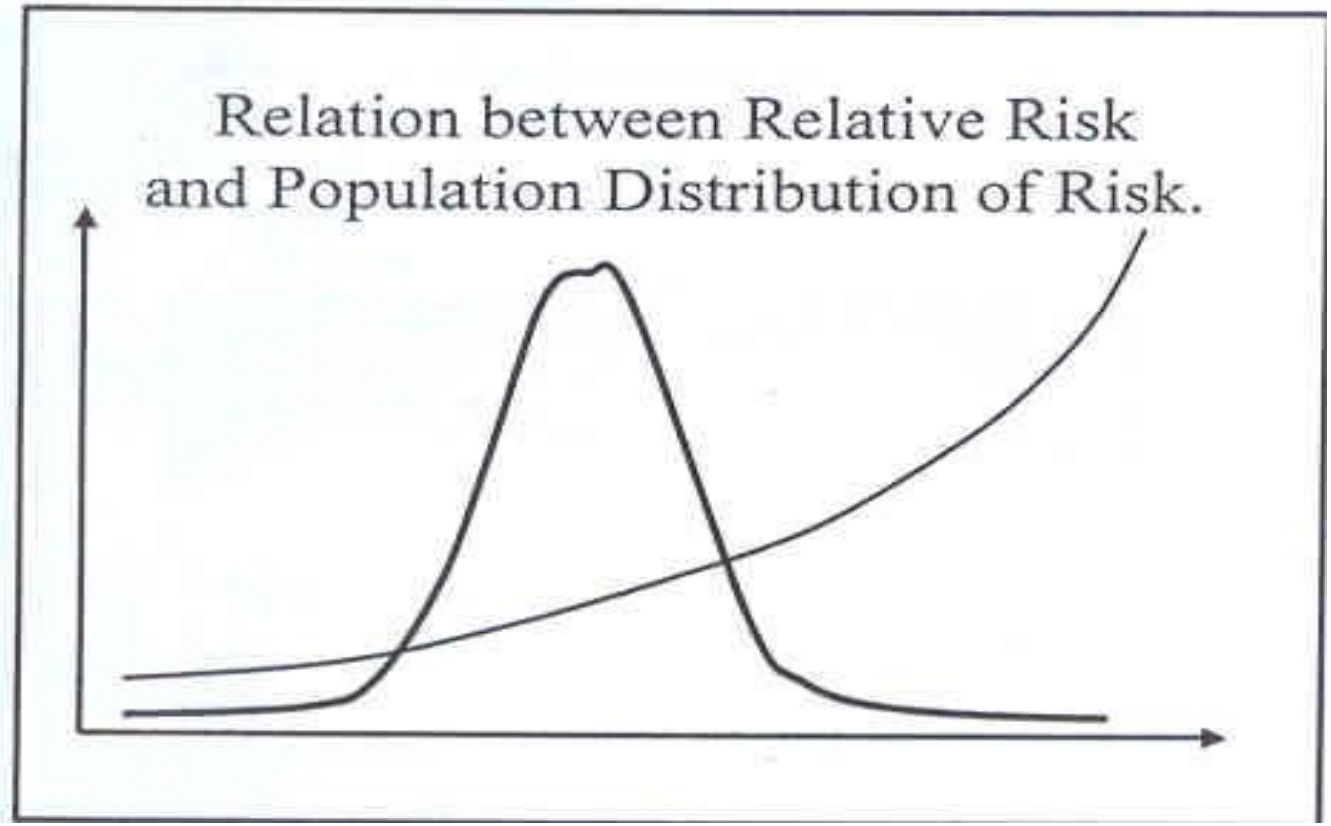


Message 1:

- A large number of people at small risk may give rise to more cases of disease than the small number who are at high risk

- Instead of targeting prevention to the high risk tail of the distribution (or medicating the whole world) better to try shifting the underlying distribution of risk

Relation Between Relative Risk and Population distribution of Risk



Rose's Message

Message 2:

- "What made this individual sick?" is a different question from "What makes this population sick?"
- The causes of sick individuals are different from the causes of sick populations.

The population strategy

- Recognitions that the occurrence diseases and exposures reflects the behavior and circumstances of society as a whole

Strength of the population strategy

- Radical
  - A radical approach aims to remove the underlying impediments to healthier behavior, or to control the adverse pressures
- Powerful
  - A disappointingly trivial benefit to individuals, but yet its cumulative benefit for the population as a whole can be unexpectedly large
- Appropriate

Limitations and problems

- Acceptability
  - Scientific evidence alone was ineffective
  - Motivation
  - Skills
- Feasibility
- Costs and safety

Serum Cholesterol Distribution in Japan vs. Finland

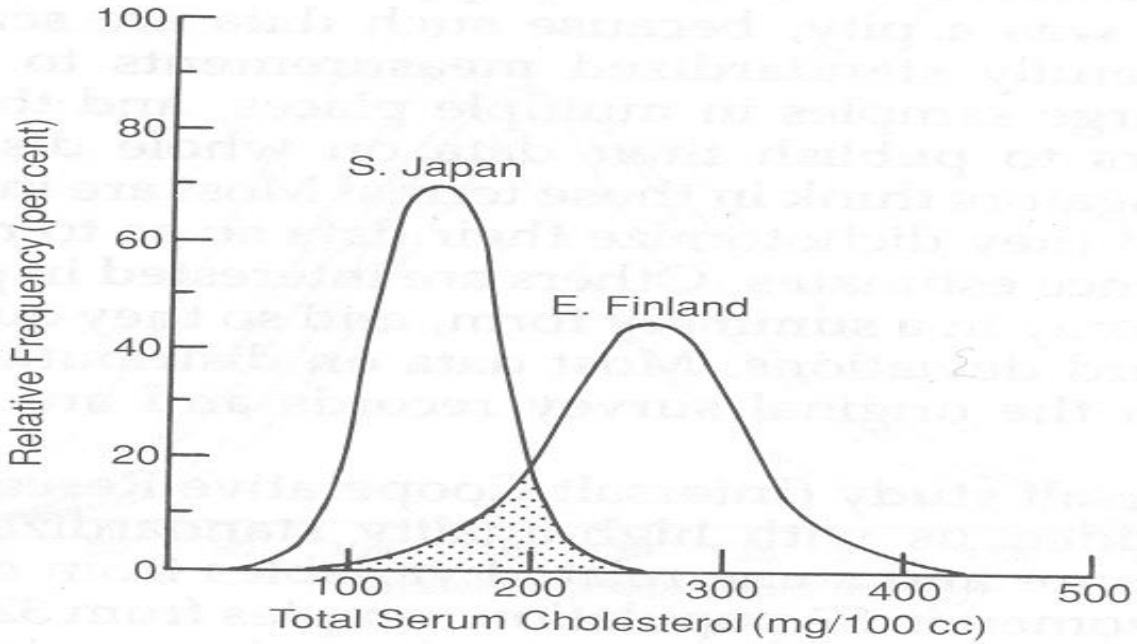
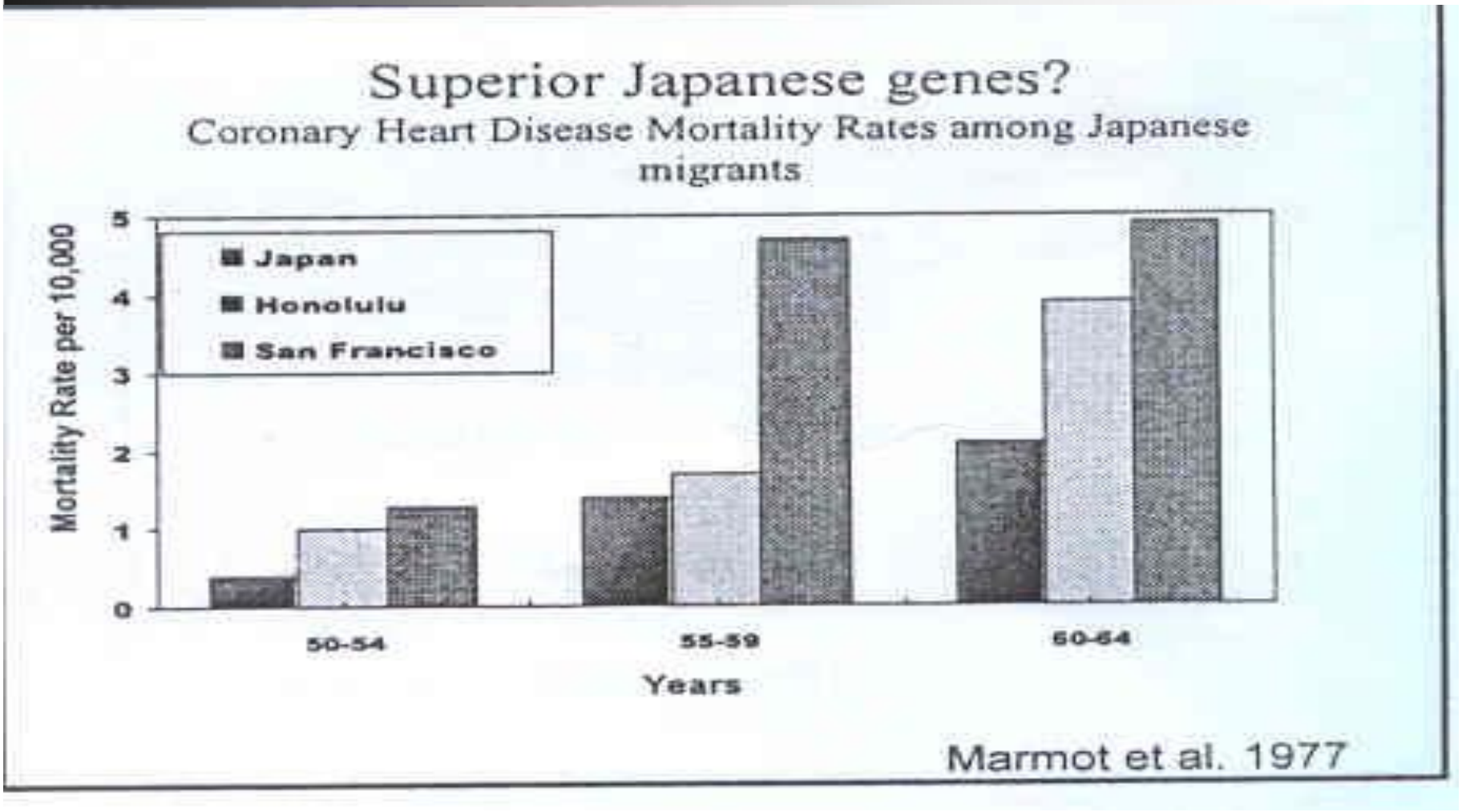


Fig. 5.1 The contrasting distributions of serum cholesterol in south Japan and eastern Finland.

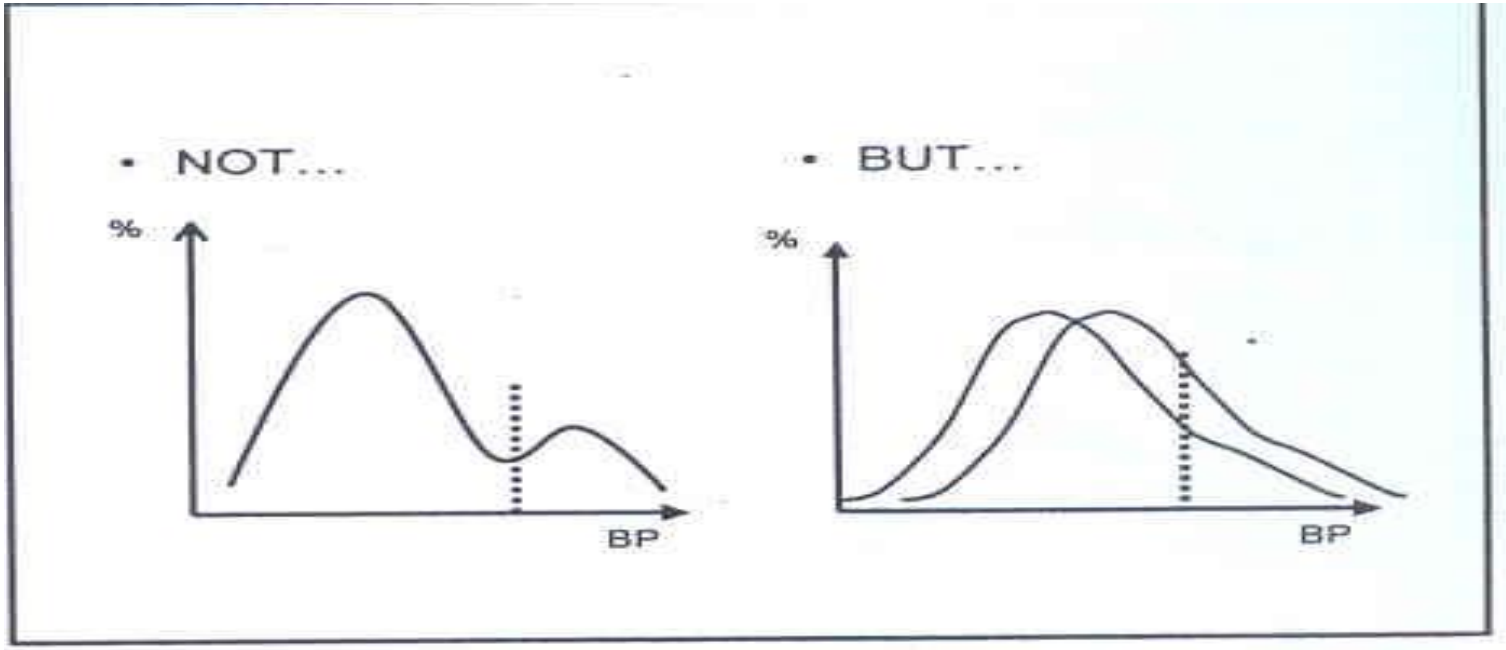
Superior Japanese genes



Rose's Message

Message 3:

- You can't divorce normality from deviance- they move up and down as a whole.


• NOT...
%
BP
• BUT...
%
BP

Rose's Message

- "It is commonly supposed that there is a clear distinction between normality and deviance, whether the attribute is psychological (like blood pressure), behavioral (like eating or drinking), or social (like aggression)."

- This view is attractive because it focuses attention on individuals who clearly have problems and at the same time reassurance the majority that they are all right..."

Rose's Message

Message 4:

- Deviance is caused by norms.
- Norms are features of society.
- The population strategy of prevention is the lying reason of the social determinants approach to health.

Rose's Message

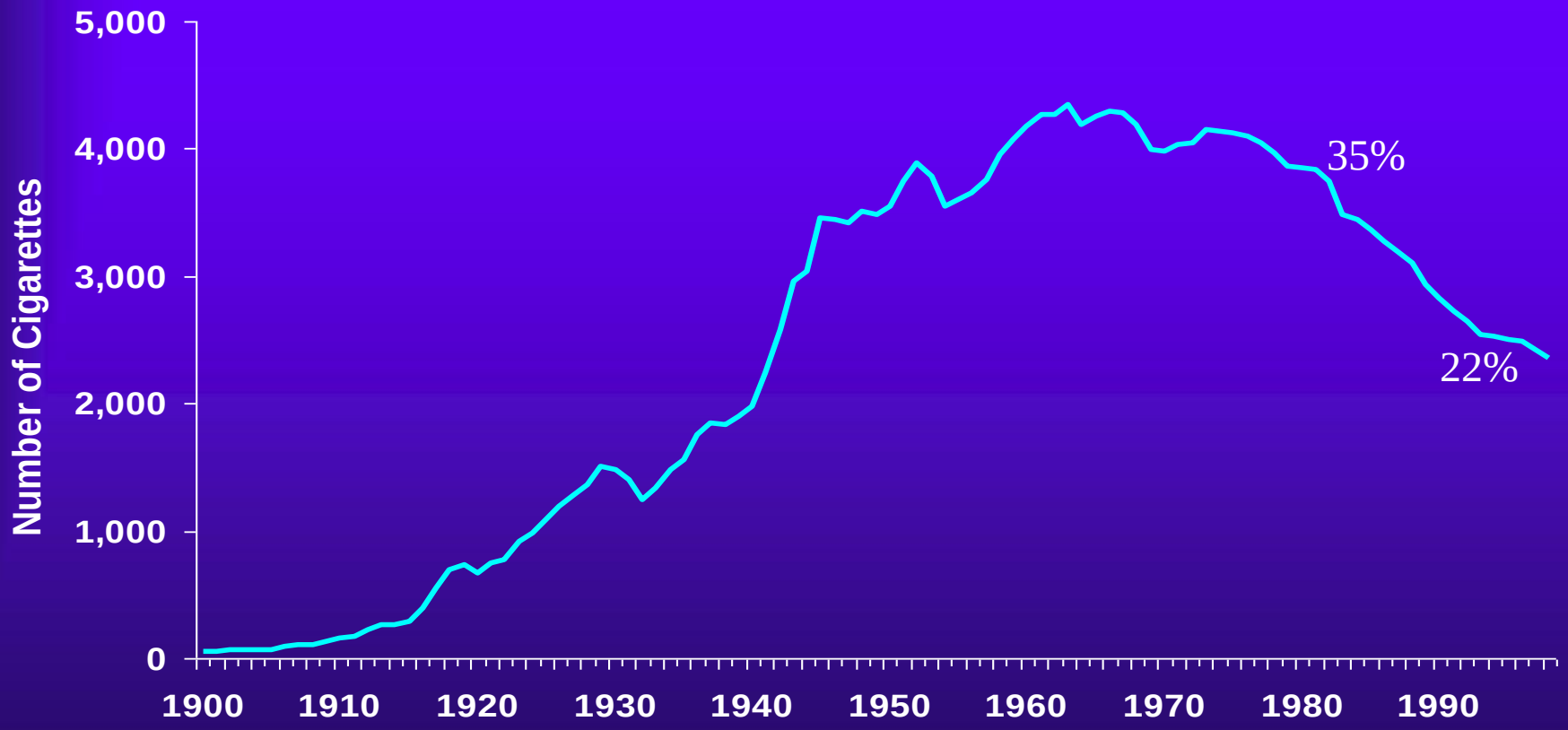
Message 4:

- it makes little sense to expect individuals to behave differently from their peers

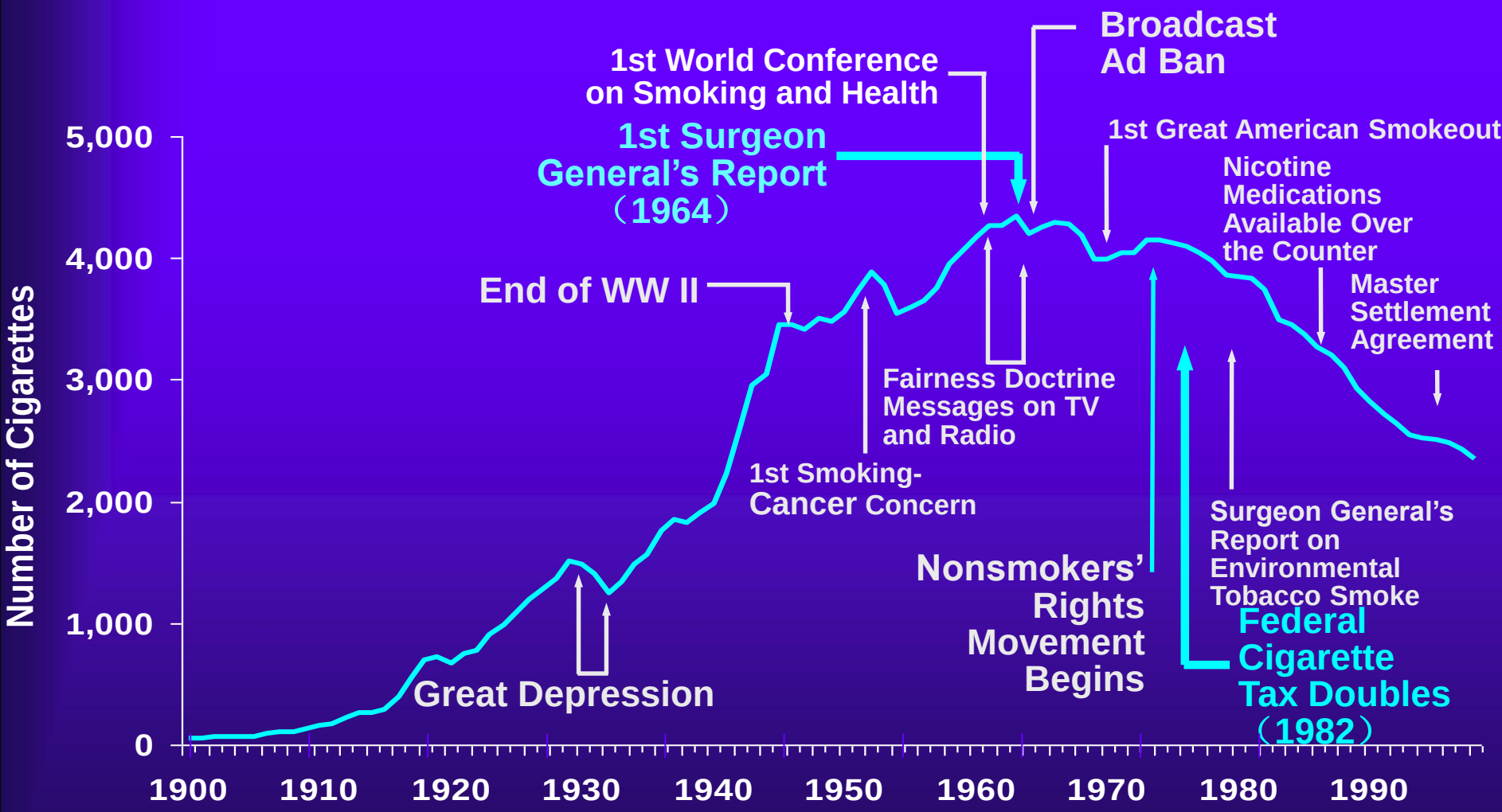
- it is more appropriate to seek a general change in behavioral norms and in the circumstances which facilitate their adoption

•**Social norms** rigidly constrain how we live, and individuals who transgress the limits can expect trouble. We may think that our personal life-style represents our own free choice, but that belief is often mistaken. It is hard to be a non-smoker in a smoking milieu, or vice versa, and it may be impossible to eat very differently from one's family and associates.

What is this public health achievement of the 20th Century?
What is the evaluation method to judge this an achievement?



Adult Per Capita Cigarette Consumption and Major Historical Events—United States, 1900-2000



Source: USDA; 1986 Surgeon General's Report

Trade-offs

- **High risk strategy**
  - ✓Big individual benefit
  - ✓Modest population benefit
- **Population strategy**
  - ✓Small individual benefit
  - ✓Big population benefit

Caveats and Final Remarks

- High risk and population strategies are not mutually exclusive.
- Population strategies can have unintended consequences.
- Population strategies are not necessarily cheaper than high risk strategies.

Population strategies are more than mass education campaigns!

Community Health Planning and Promotion

PRECEDE - PROCEED

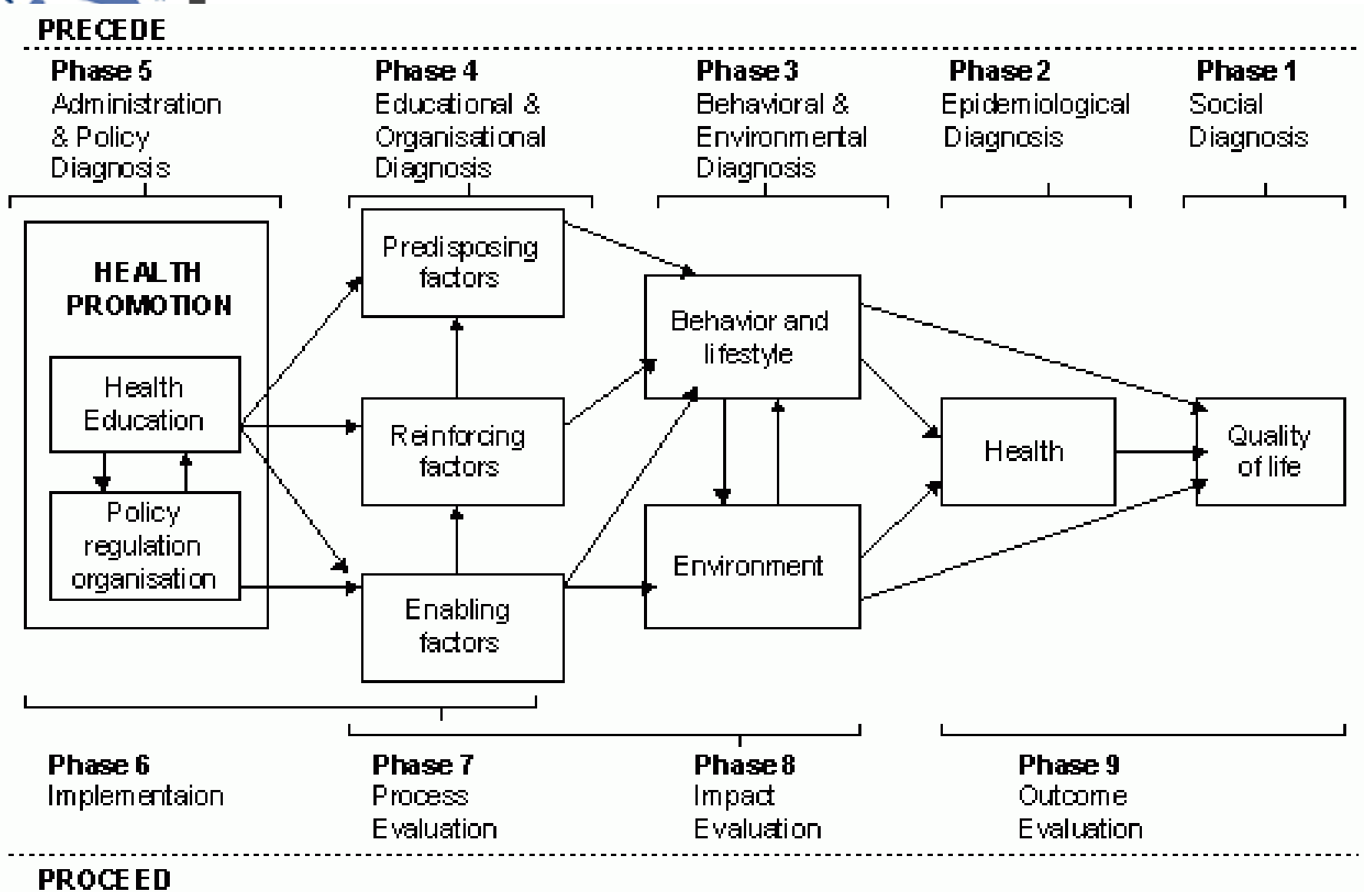
- 9 Phases
- 5 Phases are diagnostic – PRECEDE
- 4 Phases are evaluative – PROCEED

PRECEDE

- 1st Phase: Social Diagnosis
- 2nd Phase: Epidemiological Diagnosis
- 3rd Phase: Behavioral/Environmental
- 4th Phase: Educational/Ecological
- 5th Phase: Administrative/Policy

PROCEED

- 6th Phase: Implementation
- 7th Phase: Process Evaluation
- 8th Phase: Impact Evaluation
- 9th Phase: Outcome Evaluation

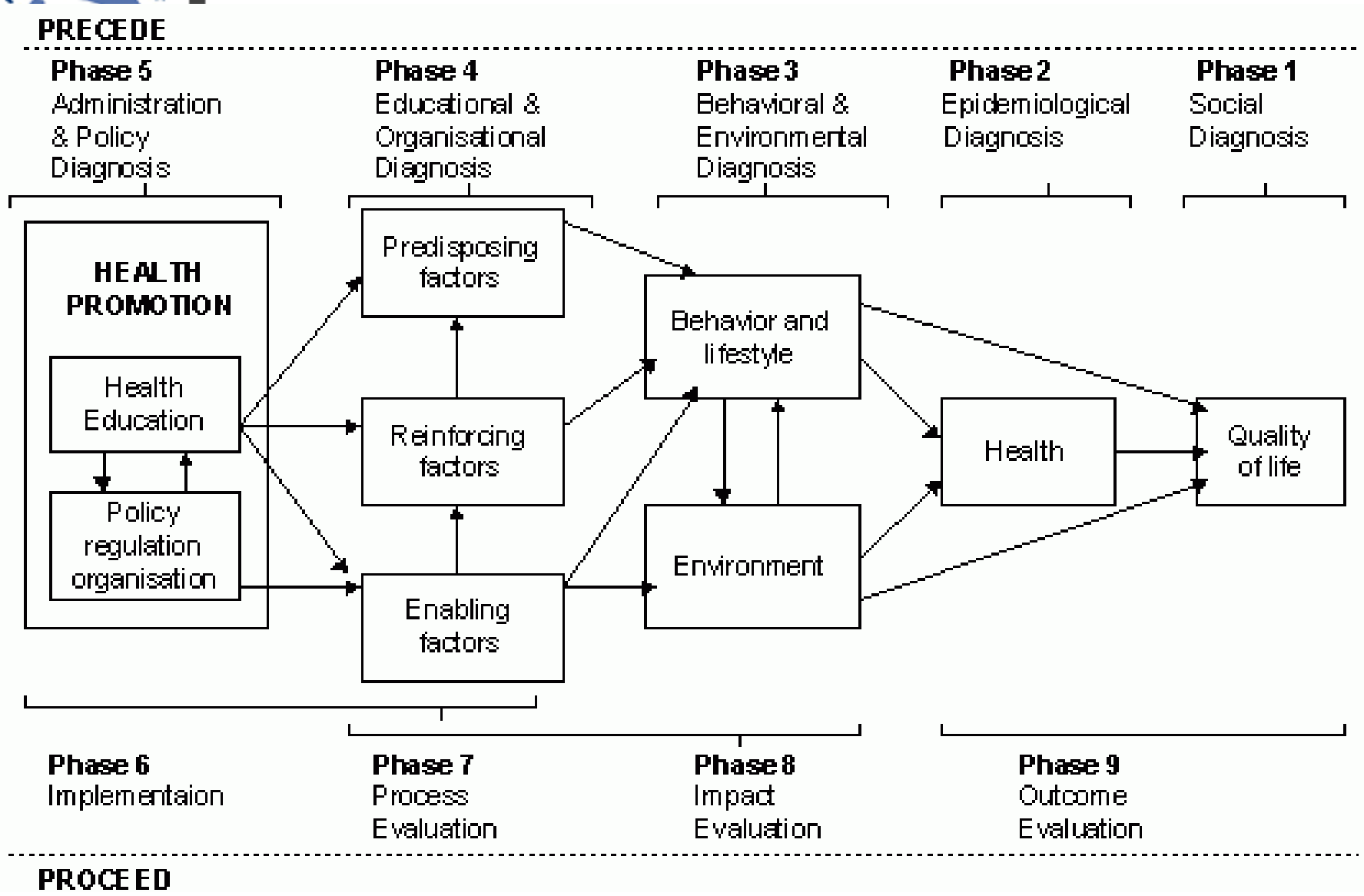

PRECEDE
Phase 5
Administration & Policy Diagnosis
Phase 4
Educational & Organisational Diagnosis
Phase 3
Behavioral & Environmental Diagnosis
Phase 2
Epidemiological Diagnosis
Phase 1
Social Diagnosis
HEALTH PROMOTION
Health Education
Policy regulation organisation
Predisposing factors
Reinforcing factors
Enabling factors
Behavior and lifestyle
Environment
Health
Quality of life
Phase 6
Implementaion
Phase 7
Process Evaluation
Phase 8
Impact Evaluation
Phase 9
Outcome Evaluation
PROCEED

Case Study 1

- A plastic surgeon has observed many children needing reconstructive surgery due to lawnmowers. The surgeon asked for support to do a program on lawnmower safety to parents in the tri-county areas. You are the head of a foundation that supports research efforts and program in the region and your organization has a board of directors.

Case Study 2

- There is a community in which the proportion of obesity among adolescents are significantly higher than the other communities. How can you set up a plan to resolve this problem?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Phase 9
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PROCEED

Community Diagnosis

- Any health education program must be based on a through assessment of community capacity and needs.

1) an epidemiologic, behavioral and social perspectives of an at-risk group or community and its problems

2) An effort to begin to understand the character of the community , its members and its strengths

Types of Social Assessment

- Qualitative vs. Quantitative
  - Qualitative = quality, low numbers, lots of information, open ended questions
    - Examples: interviews, focus groups, nominal group process
  - Quantitative = lots of numbers, limited information, closed ended questions.
    - Examples: surveys by telephone, mail, or self administered.

Qualitative Research Methods

- Focus Groups
- Nominal Groups
- Community Forum
- Observation
- Depth Interviews
- Projective Techniques

Priorities of Health Programs

1. Which problem has the greatest impact in terms of death, disease, days lost from work rehabilitation costs, disability, etc.
2. Are certain subpopulations, such as children, mothers, ethnic minorities, refugees, indigenous populations at special risk?
3. Which problems are most susceptive to intervention?

Priorities for Health Programs

4. Which problem is not being addressed by other agencies in the community?
5. Which problem, when appropriately addressed, has the greatest potential for an attractive yield?
6. Are any of the health problems highly ranked as a regional or national priority?

Epidemiological Assessment/Diagnosis

- **Epidemiology**—dealing with a combination of knowledge and research methods concerned with the determinants and distribution of health and illness in populations.

Phases 3 & 4

To Identify What Causes the Causes

Behavioral & Environmental Diagnosis Steps

- Step 1: Identify and list risk factors
- Step 2: Differentiate between behavioral and environmental factors
- Step 3: Shorten the list. Which factors are relevant to the program goal?

Behavioral & Environmental Diagnosis Steps

- Step 4: Determine Importance.
  - How prevalent is the behavior?
  - Does factor contribute to problem?

Behavioral & Environmental Diagnosis Steps

- Step 5: Determine Changeability
  - There is precedence elsewhere for similar changes.
  - The economic costs are not prohibitive.
  - The proposed change is supported by public demand.

Educational & Organizational Diagnosis Steps

- Step 1: Identify factors explaining health behavior.

- Step 2: Classify into Predisposing, Reinforcing, and Enabling Factors

Factors Effecting Behavior

- Predisposing (before behavior)
  - Motivate behavior related to health.
    - Knowledge
    - Attitudes
    - Beliefs

Factors Effecting Behavior

- Enabling (before behavior)
  - Characteristics of environment that facilitate health behavior or attaining skills required to perform behavior.
    - Skills
    - Peers
    - Other important persons
    - Laws and regulations

Factors Effecting Behavior

- Reinforcing (after behavior)
  - Reward or punishment following consequence of health behavior.
    - Encouragement
    - Reward/punishment
    - Other people

Selecting Factors & Priorities

- Step 3: Determine the importance of each factor
- Step 4: Determine the changeability of each factor.
- Step 5: Create a matrix to find factors that have a high importance and high changeability.
- Step 6: Write measurable learning objectives.

Goals & objectives

- A goal is a future event toward which a committed endeavor is directed;
- objectives are the steps to be taken in pursuit of a goal

Goals & objectives

- Compared to objectives, a goal is

1) much more encompassing, or global
2) Include all aspects or components
3) Provides overall direction for a program
4) More general in nature
5) Takes longer to complete
6) Does not have a deadline
7) Often not measurable in exact term

Goals written

- Need not written as complete sentences
- Should be simple and concise

two basic components

1) who will be affected

2) what will change as a result of the program

include verbs such as improve,increase,promote,protect,minimize

Administrative Diagnosis

- Step 1: Resources needed
  - Time
  - Staff
  - Money
- Step 2: Assessment of Available Resources

Administrative Diagnosis

- Step 3: Assessment of Barriers to Implementation
  - Staff Commitment and Attitudes
  - Conflict of Goals
  - Rate of Change
  - Familiarity
  - Complexity
  - Space
  - Community Barriers

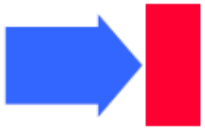
Policy Diagnosis

- Step 1: Assessment of Policies, Regulations, and Organization
  - Loyalty
  - Consistency
  - Flexibility
  - Administrative/Professional Discretion

Components of a Proposal

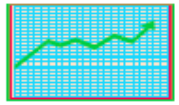
1. Introduction
2. Program goals and objectives
3. Detail of program strategies and activities
4. Evaluation of program
5. Program timeline

Evaluation is……



… the *systematic assessment* of the *operation* and/or *outcomes*

of a *program or policy*, compared to a set of explicit or implicit



standards as a means of contributing to the *improvement*

of the program or policy

Thanks for your attention!