

Science of Public Health. Public Health System

Lectures 8. Public Health

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Lecture outline

- Public Health Definition and Key Terms
- History of Public Health
- A Public Health Approach
- Core Functions and Essential Services of Public Health
- Stakeholder Roles in Public Health
- Determining and Influencing the Public's Health



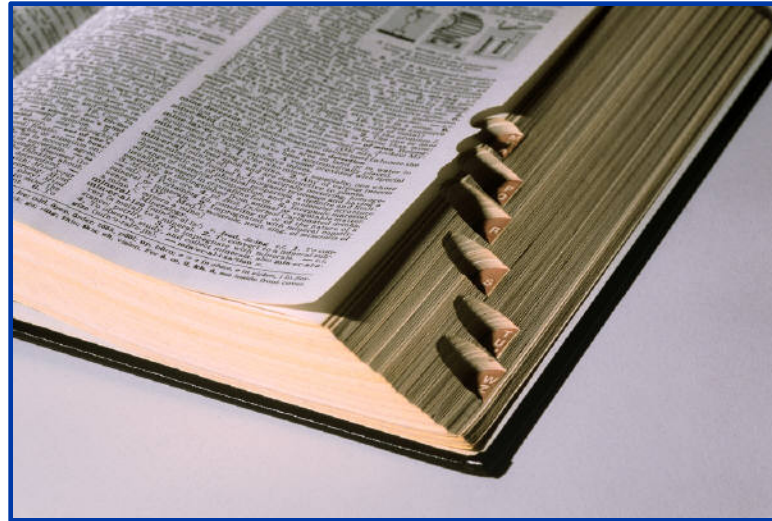
Learning Objectives

After this course, you will be able to

- describe the purpose of public health
- define key terms used in public health
- identify prominent events in the history of public health
- recognize the core public health functions and services
- describe the role of different stakeholders in the field of public health
- list some determinants of health
- recognize how individual determinants of health affect population health



Public Health Definition and Key Terms



PUBLIC HEALTH:

C. E. A. Winslow defined public health in 1929 as:

“The science and art of **preventing disease, prolonging life, and organized community** efforts for:

- Sanitation of the environment
- Control of communicable infections
- Education of the individual in personal hygiene
- Organization of medical and nursing services for the early diagnosis and preventive treatment of disease
- The development of the social machinery to ensure everyone a standard of living adequate for the maintenance of health, so organizing these benefits as to enable every citizen to realize his birthright of health and longevity”.



The Mission of Public Health:



“Public health aims to provide maximum benefit for the largest number of people.”



The Mission of Public Health:



**The fulfillment of society's interest
in assuring the conditions in which
people can be healthy**



Public Health Key Terms

More common terms: public health, life span, life expectancy, health determinant, lifestyle

In Epidemiology: morbidity, mortality, prevalence, and incidence

In Environmental health: risk factor, environmental factors, risk assessment, health outcome



Public Health Key Terms

clinical care: prevention, treatment, and management of illness and the preservation of mental and physical well-being through the services offered by medical and allied health professions; also known as *health care*.

determinant: factor that contributes to the generation of a trait.

epidemic or outbreak: occurrence in a community or region of cases of an illness, specific health-related behavior, or other health-related event clearly in excess of normal expectancy. Both terms are used interchangeably; however, *epidemic* usually refers to a larger geographic distribution of illness or health-related events.

health outcome: result of a medical condition that directly affects the length or quality of a person's life.



Stedman TL, ed. Stedman's medical dictionary. 28th ed. Baltimore, MD: Lippincott, Williams, and Wilkins; 2006.

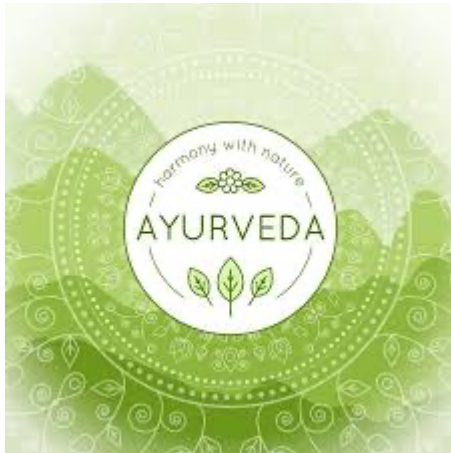
Farlex, Inc. The free dictionary. Huntingdon Valley, PA: Farlex, Inc.; 2014. Available at: <http://www.thefreedictionary.com/>.

The History of Public Health



Sanitation and Environmental Health

800-200 BCE



Ayurvedic medicine developed, and with it medical schools and public hospitals

500 BCE



Greeks and Romans practice community sanitation measures

1750-1840s



Rapid advancement of clinical medicine, epidemiology and occupational medicine

1881-1965



National health insurance plans were Introduced in many countries

Pandemics

Influenza



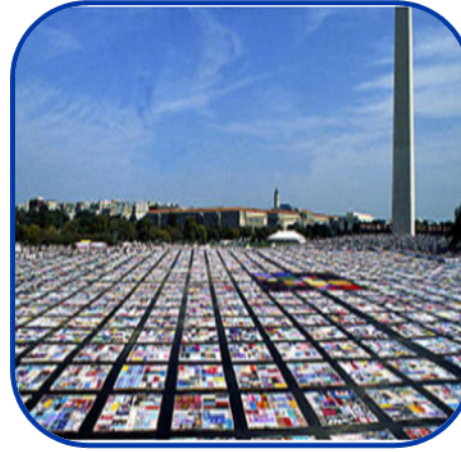
500 million infected
worldwide in 1918

Polio



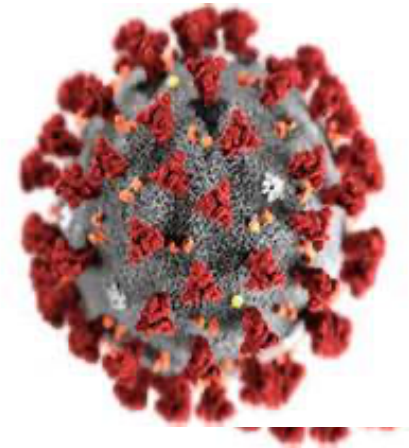
Vaccine introduced
in 1955; eradication
initiative launched in
1988

HIV



34 million living with
HIV worldwide; 20%
decline in new
infections since 2001

COVID-19



3 193 961 total
confirmed cases
worldwide as for
30.04.2020

Preparedness for Disaster Response

Biologic
Warfare



Plague used as a
weapon of war during
the Siege of Kaffa

September
2001



Public health
surveillance
conducted after
the 9/11 attacks

Hurricane
Katrina



Emergency services,
public health
surveillance, and
disease treatment
provided

Prevention Through Policy

Book
of Leviticus



The world's
first written
health code

Tobacco
Laws



Laws banning smoking
in public places

Obesity

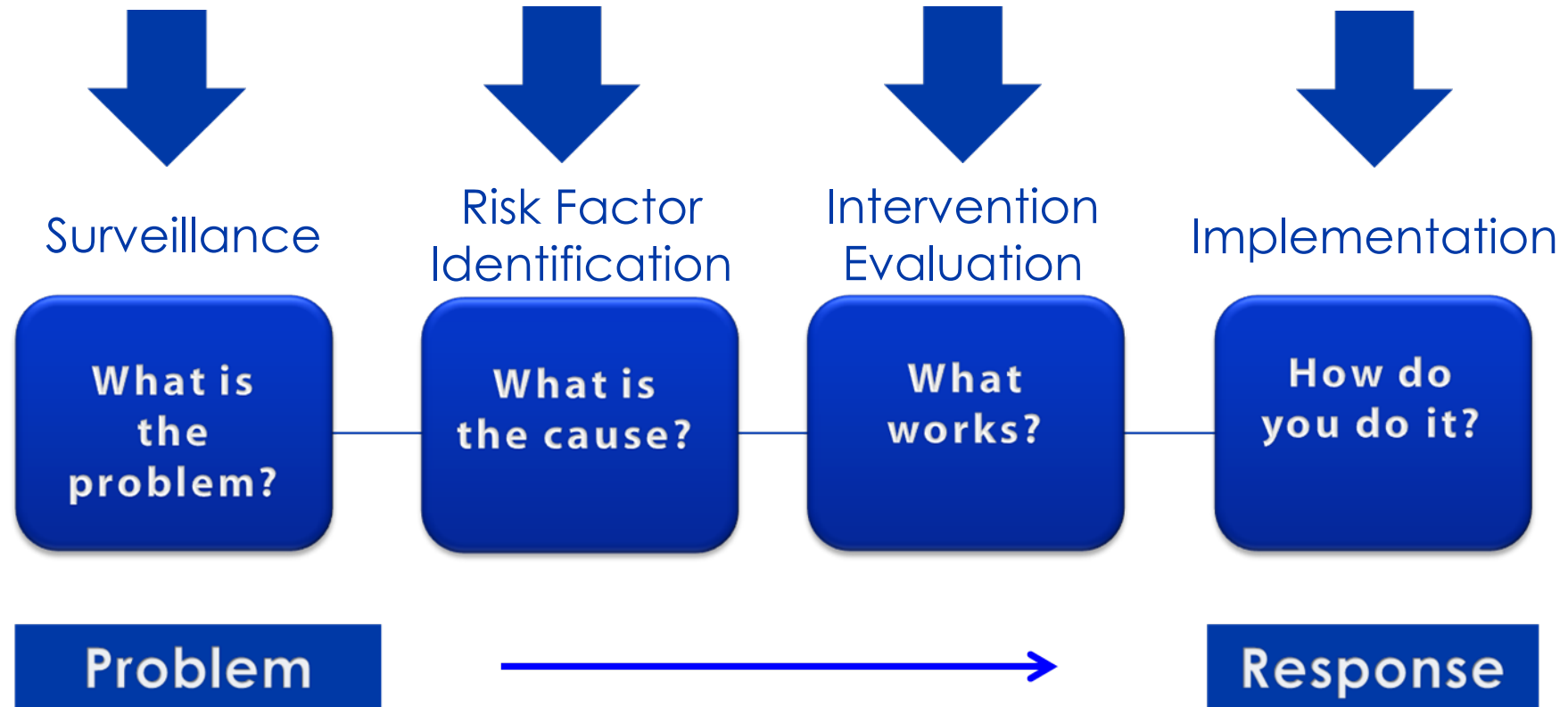


Food labeling and
promotion of physical
activity

A Public Health Approach



A Public Health Approach



Public Health Core Sciences



Cholera — A Public Health Approach

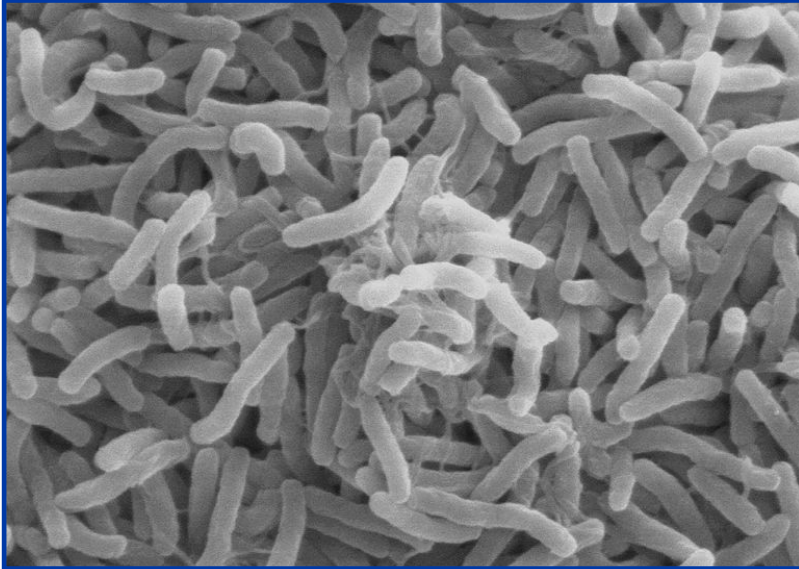


Photo: TJ Kirn, MJ Lafferty, CMP Sandoe, and R Taylor,
Dartmouth Medical School

Cholera, a fatal intestinal disease, was rampant during the early 1800s in London, causing death to tens of thousands of people in the area. Cholera was commonly thought to be caused by bad air from rotting organic matter.

John Snow, Physician

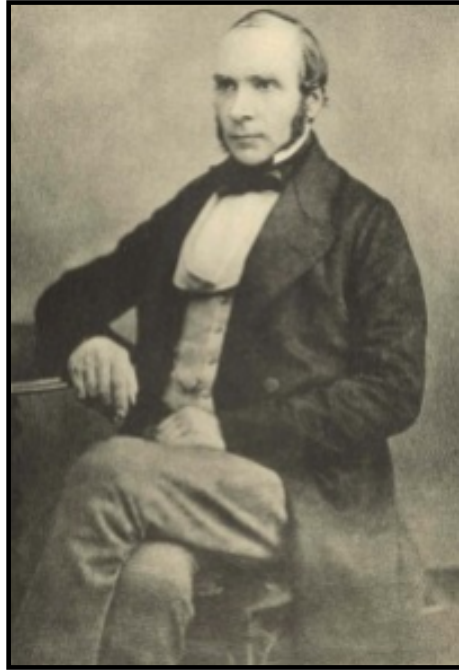


Photo: London School of Hygiene
and Tropical Medicine

John Snow is best known for his work tracing the source of the cholera outbreak and is considered the father of modern epidemiology.



Epidemiology — What is the Problem?

Cluster of Cholera Cases, London — 1854

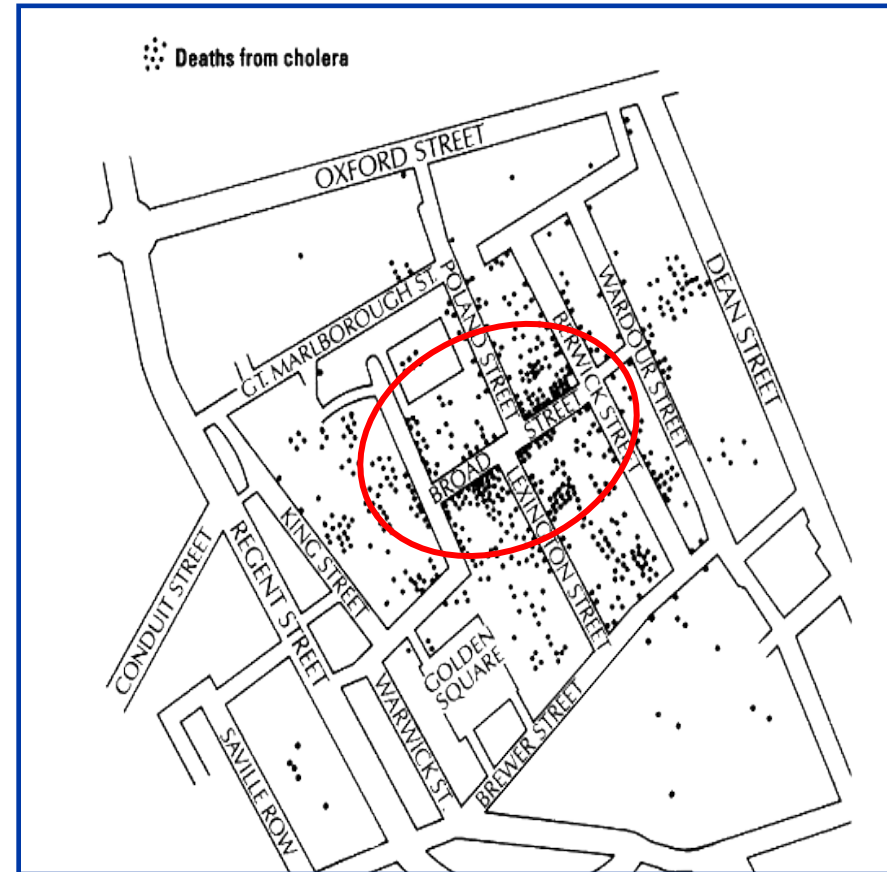


Image: The Geographical Journal

Risk Factor Identification — What Is the Cause?

Cluster of Cholera Cases and Pump Site Locations

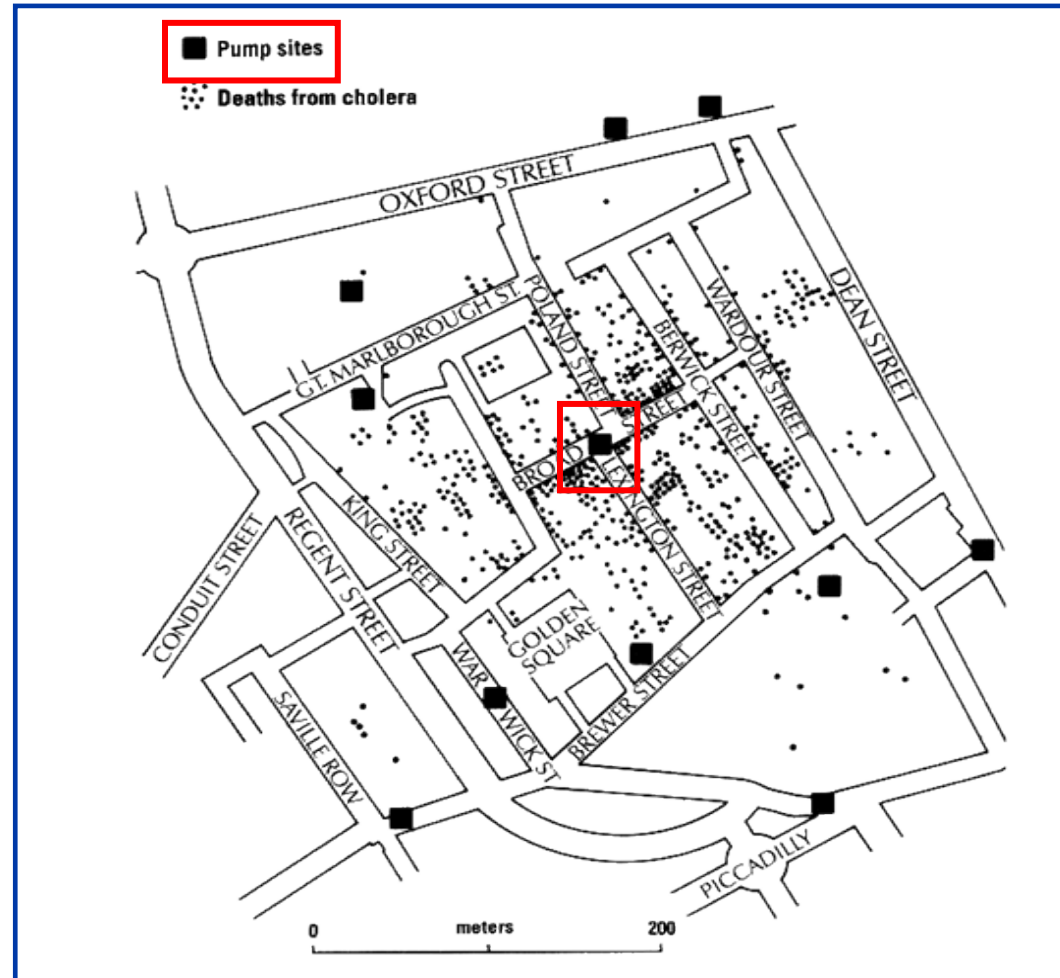


Image: The Geographical Journal

Intervention Evaluation — What Works?

Through continuous research, Snow understood what interventions were required to

- stop exposure to the contaminated water supply on a larger scale, and
- stop exposure to the entire supply of contaminated water in the area



Implementation — How Do You Do It?



John Snow's research convinced the British government that the source of cholera was water contaminated with sewage

Photo: Justin Cormack

Core Functions and Essential Services of Public Health



Three Core Functions of Public Health

Assessment



Systematically collect, analyze, and make available information on healthy communities

Policy



Promote the use of a scientific knowledge base in policy and decision making

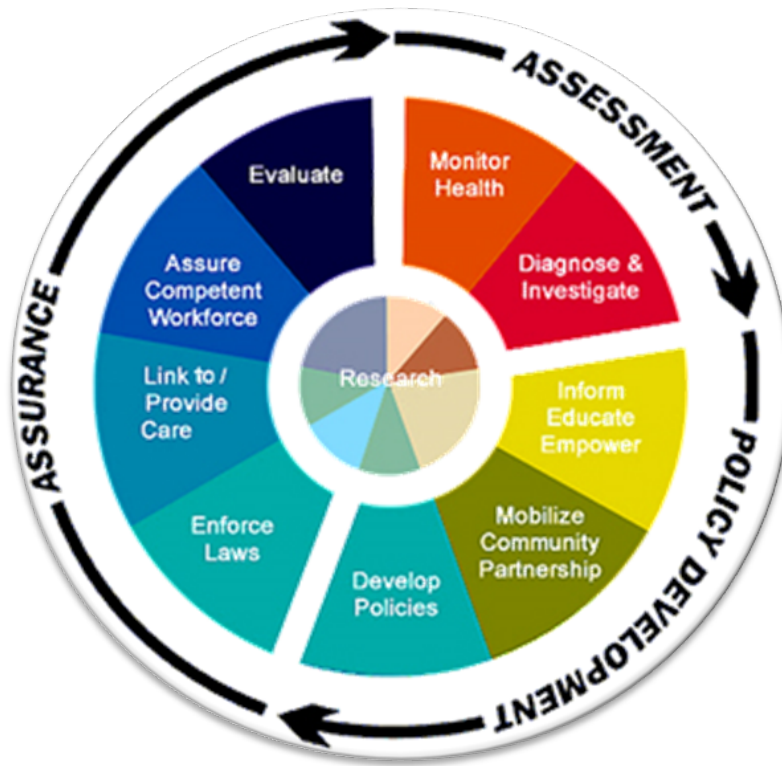
Assurance



Ensure provision of services to those in need



Ten Essential Public Health Services



1. Monitor Health
2. Diagnose and Investigate
3. Inform, Educate, Empower
4. Mobilize Community Partnership
5. Develop Policies
6. Enforce Laws
7. Link to/Provide Care
8. Assure a Competent Workforce
9. Evaluate
10. Research

Core Functions at Government Levels

	Assessment	Policy Development	Assurance
State	National tobacco public health surveillance	Smoking ban on commercial flights	Federal grants for antismoking research
Regional	Monitor state tobacco use	Increase tobacco tax	Funding for campaign through Proposition 99
Local	Report on local tobacco use	County laws prohibiting smoking in bars	Resources to help smokers quit in multiple languages



Essential Services of Public Health

- Monitor health status
- Diagnose and investigate
- Inform and educate
- Mobilize communities to identify health problems
- Develop policies and plans
- Enforce laws and regulations
- Link people to needed health services
- Assure a competent healthcare workforce
- Evaluate health services
- Conduct research



1. Monitor Health to Identify & Solve Community Health Problems

- Surveillance systems to collect and analyze data in order to understand health patterns – systems such as:
 - Population health registries
 - Clinic data
 - Traffic injury data
- Timely communication of health information to support decision-making on health actions



2. Diagnose and Investigate Community Health Problems and Hazards

- Timely identification of health threats, ie., hantavirus, avian flu, malaria, etc
- Established case investigation protocols
- Availability of diagnostic services
- Guidelines for handling specimens
- Response plans to address major health threats



3. Information, Education, and Empowerment People About Health Issues

- Accessible informs to link people to health-related services
- Initiatives using health education and communication sciences to:
 - Build knowledge and shapes attitudes
 - Informs decision-making choice
 - Develop skills and behaviors for healthy living
- Health education partnerships within the community to support healthy living



4. Mobilisation of Communities to Identify & Solve Health Problems

- Collaborative action for community health improvement requires:
 - Skilled conveners and organizers
 - Social responsiveness (above self-interest) from community members
 - System structures that link community assets and the public's will to act



5. Development of Policies and Plans That Support Community Health

- Health-related policies are public statements establishing directions individuals, organizations, or governments follow to protect and promote health
- Health plans provide strategic and operational guidance on how to reach health improvement objectives



6. Enforcement of Laws, Regulations, & Rules That Protect Health & Ensure Safety

- Assessment of legal authority and regulations effectiveness
- Advocating of regulations needed to protect and promote health
- Support of compliance efforts and enforcement as needed



7. Linking People to Personal Health Services

- Effective entry into a coordinated system of clinical care
- Ongoing care management
- Culturally appropriate and targeted health information for at risk population groups
- Transportation and other enabling services
- Technical assistance for effective health promotion programs



8. Provision of Competent Public and Personal Healthcare Workforce

- Workforce capacity
 - Adequate supply of health worker
 - A system to assure competent health workers
- A system supporting life-long learning
 - Academic-Community partnerships to assure relevant learning experiences
 - An environment that cultivates leadership and cultural competence



9. Evaluation of Effectiveness, Accessibility, and Quality of Health Services

- Evaluation answers
 - Are we doing things right?
 - Are we doing the right things?
- Evaluation must be ongoing and should examine:
 - Service utilization
 - Program effectiveness
 - Health behavior and health status impacts
- Evaluation should drive resource allocation



10. Research for Insights and Solutions to Health Problems

- Research opportunity exist in public health settings
- Ongoing partnerships are needed with academic and research centers
- Capacity to lead and participate in health services research is essential
- Participatory research processes enhance ethical conduct and relevance of the study



What Is Public Health Anyway?

- Not a single product or service provided by one type of health professional in one place
- Not a single specialty but *trans*-disciplinary
- A web of relationships among many different people and organizations about a wide variety of topics – a dynamic system!
- **Public health is about each of us taking responsibility for advancing the health of the public, our community's health!**



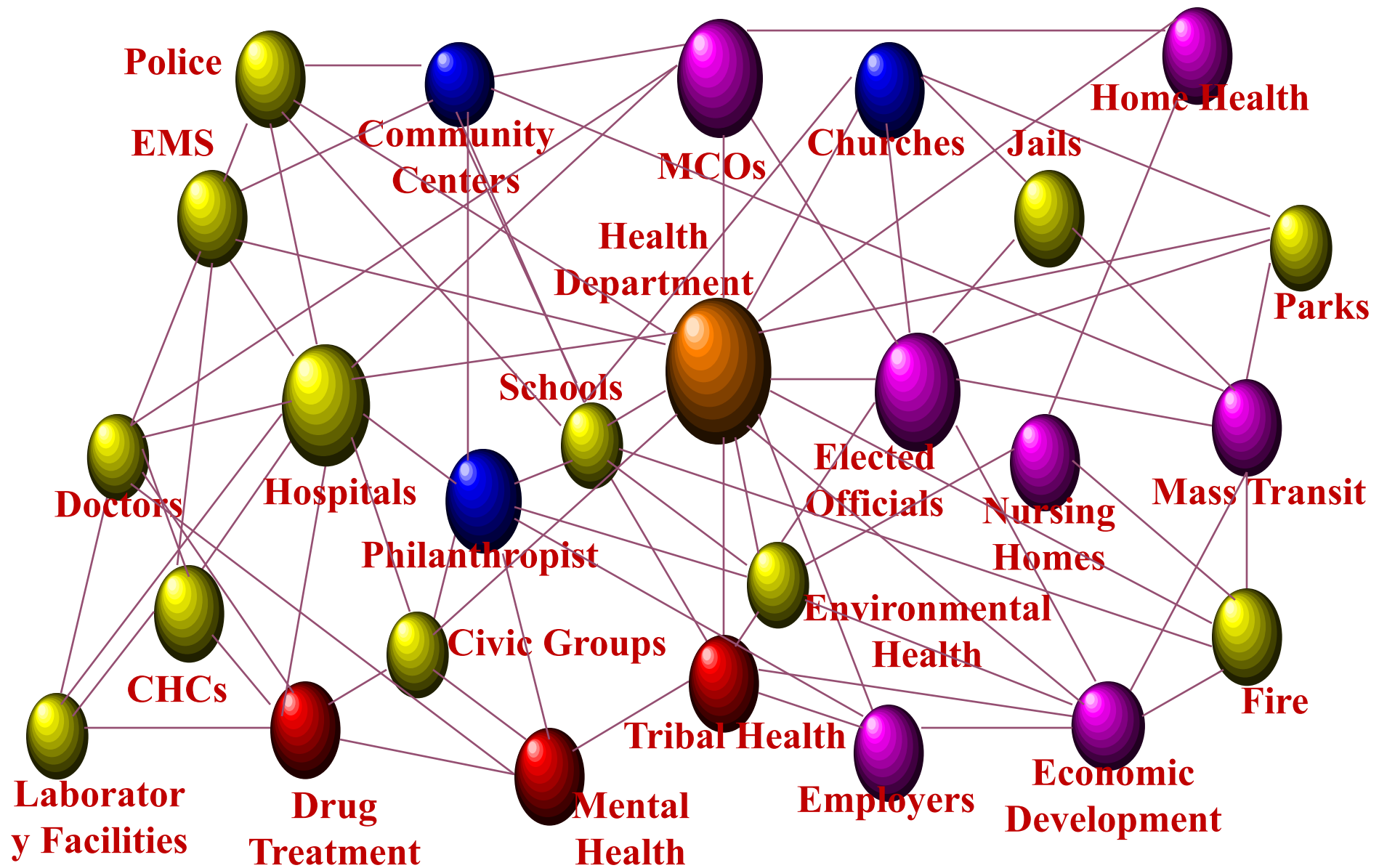
The Public Health System

A public health system includes: All public, private, and voluntary entities that contribute to quality of life and improving health.

A public health system is: A network of entities with differing roles and interactions.

All entities contribute to the health and well-being of the community.

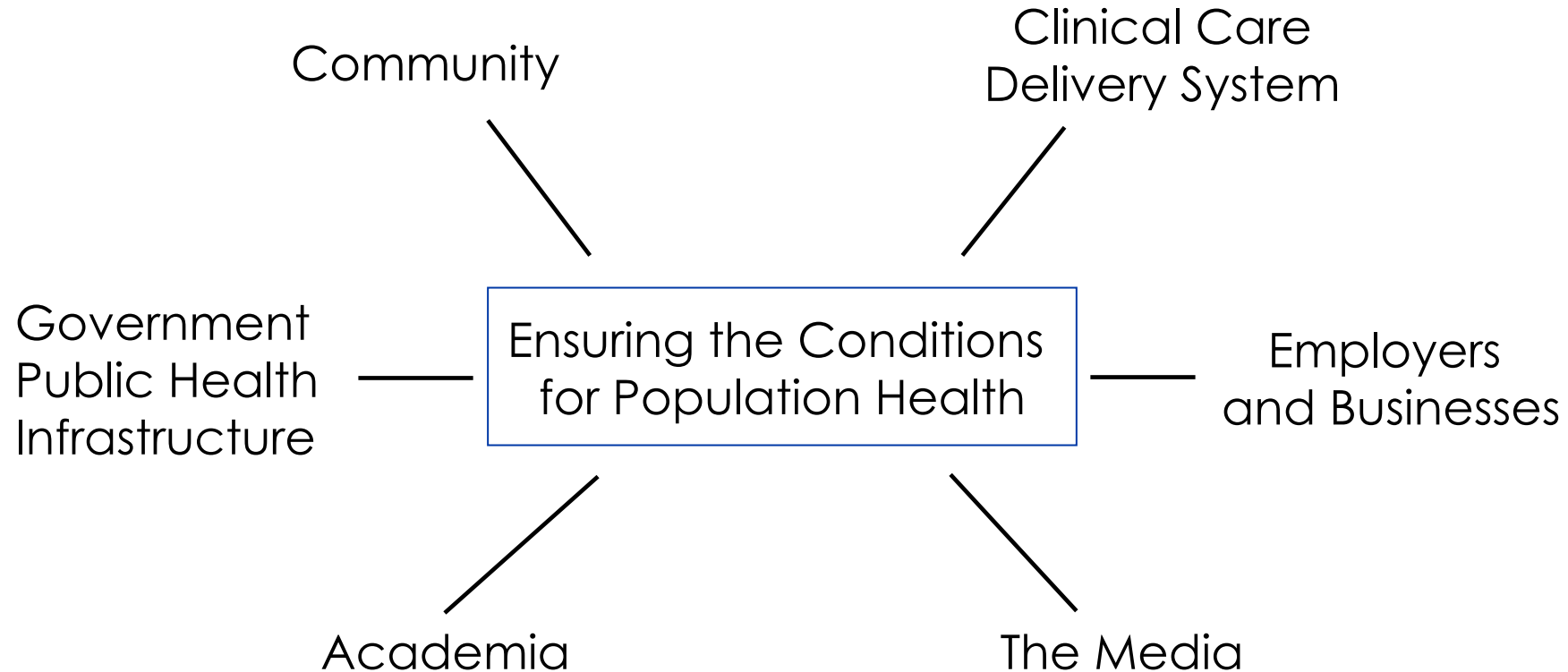




Stakeholder Roles in Public Health



Partners in the Public Health System



Nongovernmental Organization Examples

Organization Type	Example
Professional membership organizations	American Public Health Association
Associations related to a specific health concern	American Cancer Society
Organizations of citizens focused on health concerns	Americans for Nonsmokers Rights
Foundations that support health projects and influence public policy development	Bill and Melinda Gates Foundation



Health Care as a Partner in Public Health

Public Health	Health Care
Population focus	Individual patient focus
Public health ethic	Personal service ethic
Prevention or public health emphasis	Diagnosis and treatment emphasis
Joint laboratory and field involvement	Joint laboratory and patient involvement
Clinical sciences peripheral to professional training	Clinical sciences essential to professional training
Public sector basis	Private sector basis



Other Partners in Public Health

Media



- Vehicle for public discourse
- Health education and promotion
- Health communication
- Social media as catalyst

Employers and Businesses



- Employer-sponsored health insurance programs
- Wellness initiatives and benefits
- Healthy workplaces and communities

Government Agencies



- City planning
- Education
- Health in all policies

Academia



- Education
- Training
- Research
- Public Service



Determining and Influencing the Public's Health



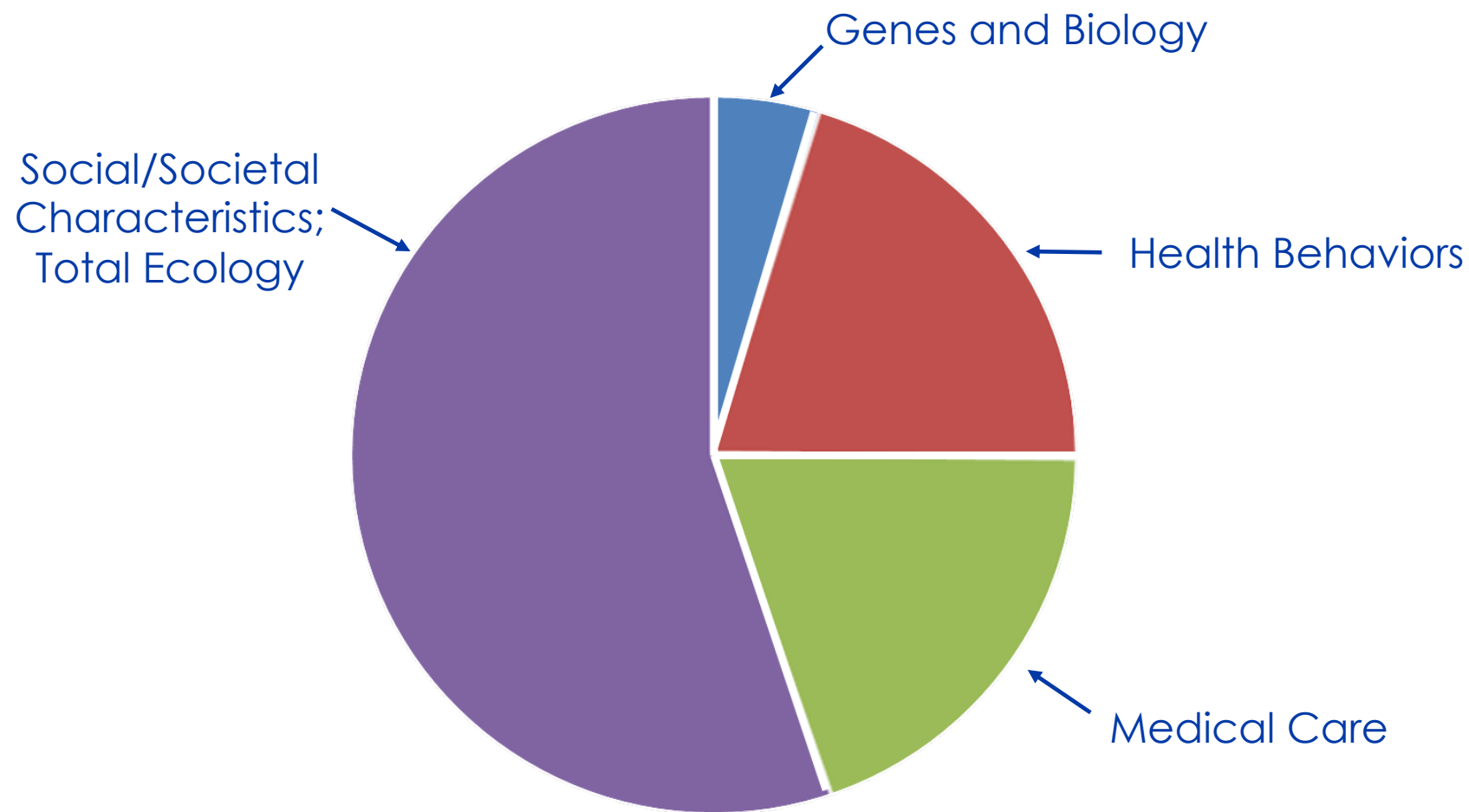
Health Determinants



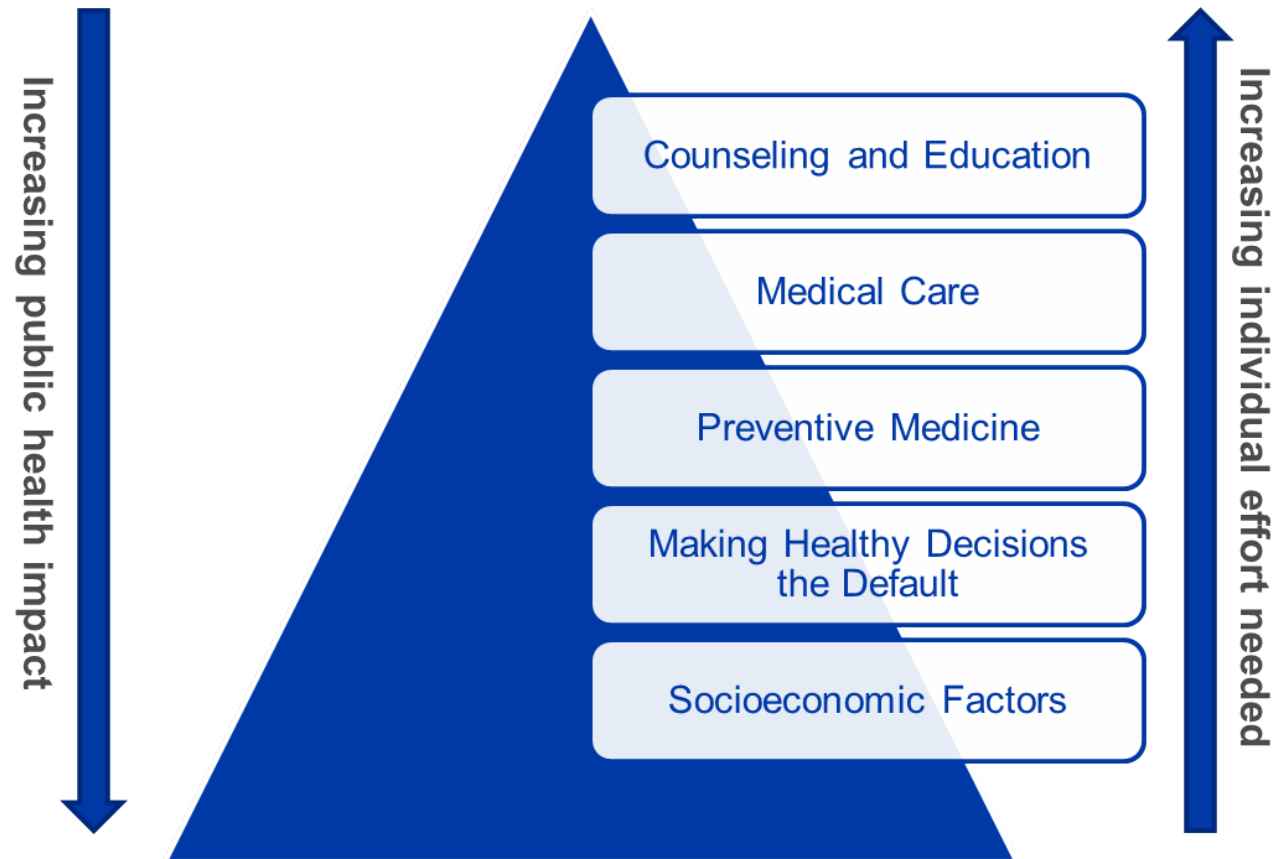
- Genes and biology
- Health behaviors
- Social or societal characteristics
- Health services or medical care



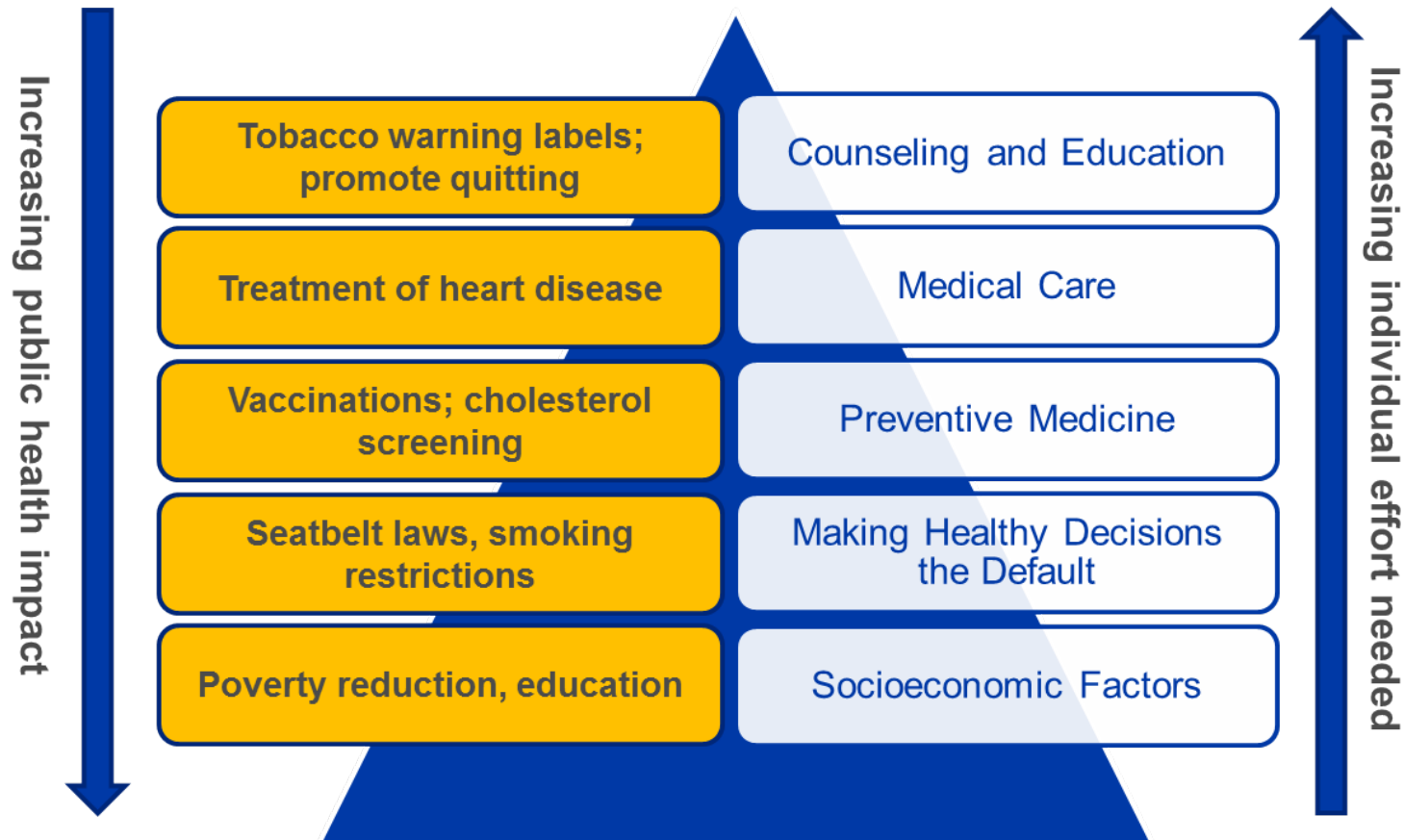
What Determines the Health of a Population?



Health Impact Pyramid



Health Impact Pyramid



“Old” Public Health

Second half of 19th and first half of the 20th centuries: the foundation of public health organizations

The control of communicable diseases by:

- The development of sanitation & food control by municipal and higher levels of government
- The establishment of organized local public health offices
- Improving vaccination technology

Improved public health standards was resulting in reduced mortality and increasing longevity

Medical practitioners worked along with public health practice

The rising costs of health care

Innovations in vaccines and antibiotics production with improved nutrition and living standards helped to control infectious disease as the major cause of death



“New” Public Health

Scope of public health activities are widened in 20th century

The strong link between governmental and non-governmental activities for effective public health services

From the 1970s - a new focus on non-infectious disease epidemiology and prevention

Studies of the impact of diet and smoking on cardiovascular diseases and smoking on lung cancer isolated preventable factors for chronic disease

Modern public health has through *health promotion* and consumer advocacy played and continue to play significant roles in disease prevention contributed to dramatic changes in mortality and morbidity patterns in a wide spectrum of diseases



“New” Public Health

The new public health is compressive in scope. It relates to or encompasses all community and individual activities directed towards reducing factors that contribute to the burden of disease and foster those that relate directly to improved health

Its programs range from Immunization, health promotion, and childcare to food labeling and food fortification to the assurance of well managed, accessible health care service



Questions?