



Preventive Medicine



Health system



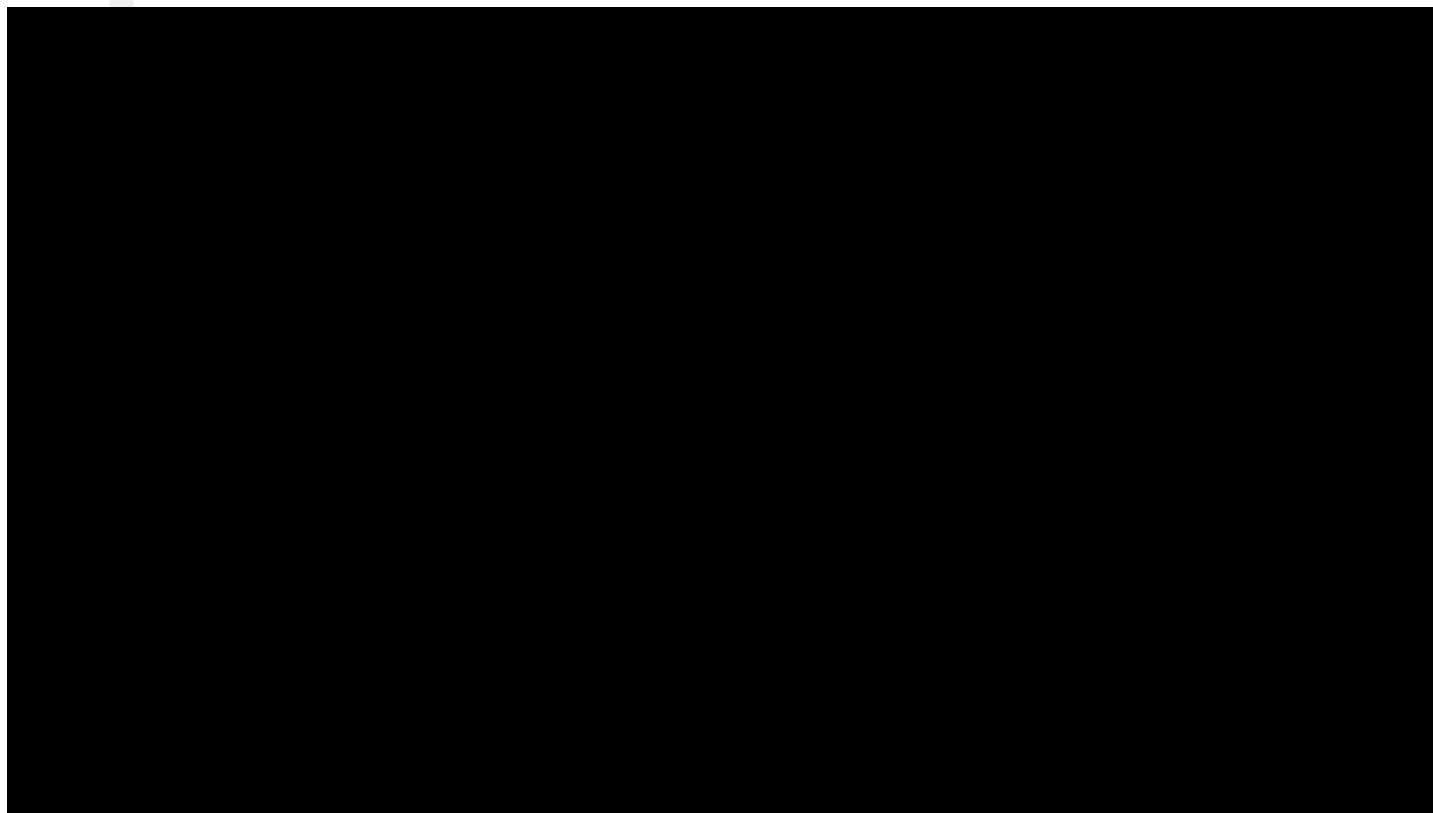
Sha Tao





Outline

- ◆ Health system definition
- ◆ What do health systems do?
- ◆ Framework for health system - six building blocks
- ◆ What resources are needed?
- ◆ Key functions
- ◆ Public health system
- ◆ Tasks for the next session





Health system definition

- ◆ All the activities whose primary purpose is to promote, restore or maintain health.
 - the sum total of all the organizations, institutions and resources
 - not only health care services
 - primary purpose is to improve health
 - needs to provide services that are responsive and financially fair, while treating people decently



What do health systems do?

- ◆ Improving the health of the population
 - Help with a much wider variety of problems
 - Not just for the relief of pain and treatment of physical limitations and emotional disorder
 - But for advice on diet, lifestyle etc.
- E.g. Seat belts saved $\approx 112,000$ lives in US (1975-1998) ; 9000 people died because they did not use their seat belts in 1998



What do health systems do?

- ◆ Responding to people's expectations
 - Their needs should be promptly attended to
 - Without long delays-respect the value of people's time
 - To reduce their anxiety
- ◆ Providing financial protection against the costs of ill-health
 - Health equity



Health system reform

- ◆ the founding of national health care systems and the extension to middle income nations of social insurance systems
- ◆ the promotion of primary health care → achieve affordable universal coverage
- ◆ supply-oriented → demand/supposed needs oriented



Framework

SYSTEM BUILDING BLOCKS

SERVICE DELIVERY

HEALTH WORKFORCE

INFORMATION

MEDICAL PRODUCTS, VACCINES & TECHNOLOGIES

FINANCING

LEADERSHIP / GOVERNANCE

ACCESS
COVERAGE



QUALITY
SAFETY

OVERALL GOALS / OUTCOMES

IMPROVED HEALTH (LEVEL AND EQUITY)

RESPONSIVENESS

SOCIAL AND FINANCIAL RISK PROTECTION

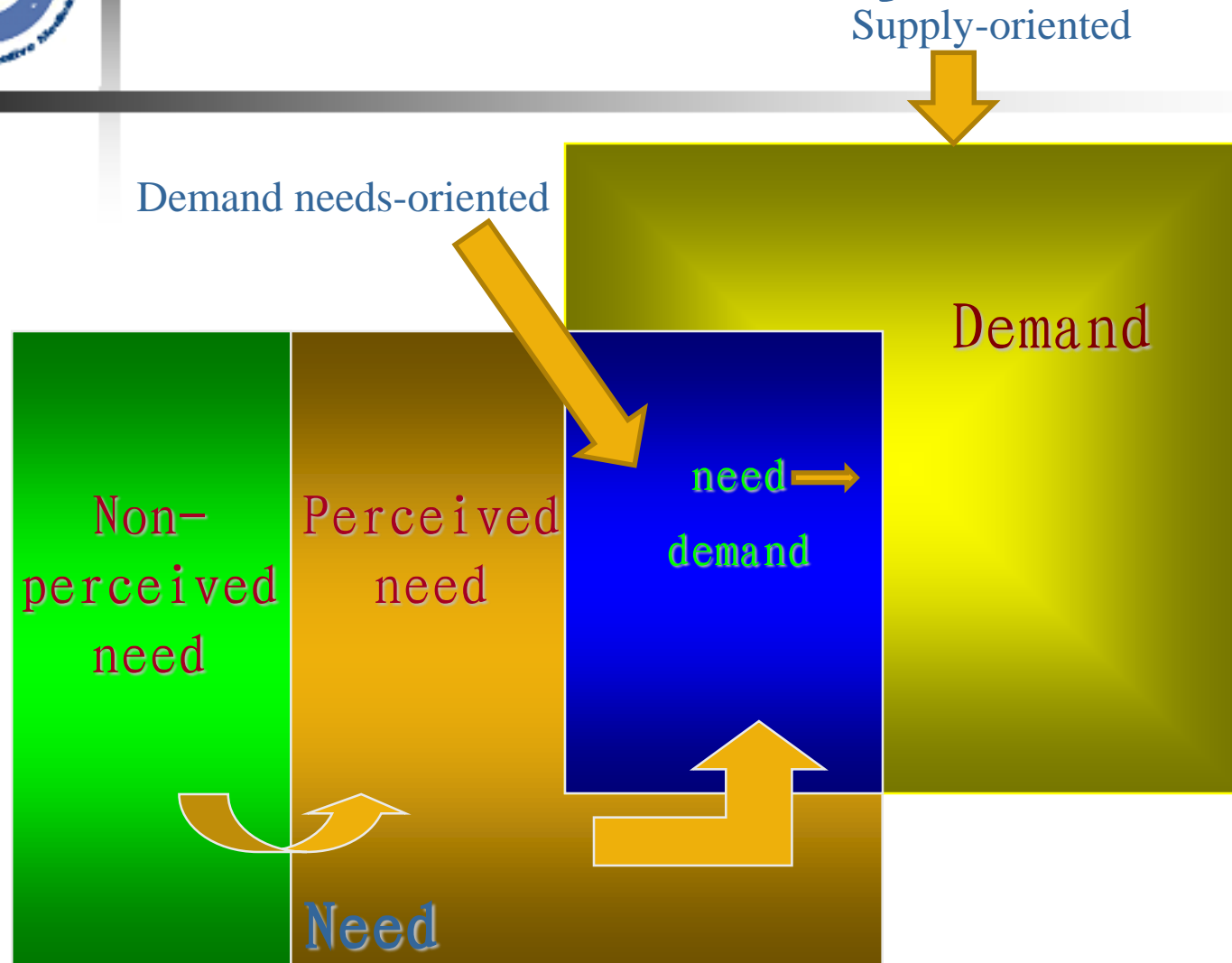
IMPROVED EFFICIENCY



Six building blocks – service delivery

- ◆ Good health services are those which deliver **effective, safe, quality** personal and non-personal health interventions to those **who** need them, **when** and **where** needed, with minimum waste of resources.

Service delivery





Service delivery

- ◆ How inputs and services are organized and managed
- ◆ There are no universal models for good service delivery
- ◆ Enhance **equitable access**, **quality** and **safety**
- ◆ Community health workers, social marketing, uses of new technologies, hospital service organization and management etc.



Six building blocks – health workforce

- ◆ Health workers are all people engaged in actions whose primary intent is to protect and improve health
 - country level plans, sufficient numbers and mix of staff, fairly distributed; they are competent, responsive and productive
 - training programs, maintain quality of education/ training and practices



Health workforce

- finance scaling-up of education programs and of numbers of health workers
- organize their health workers for effective service delivery, at different levels of the system (primary, secondary, tertiary), and monitor and improve their performance
- retain an effective workforce



Six building blocks - information

- ◆ Ensures the production, analysis, dissemination and use of reliable and timely information by decision-makers at different levels of the health system, both on a regular basis and in emergencies.



Information

- ◆ three domains: health determinants, health systems performance and health status
- ◆ data: from censuses, household surveys, civil registration data, public health surveillance, medical records, data on health services and health system resources
- ◆ to detect, investigate, communicate and contain events that threaten public health security at the place they occur, and as soon as they occur
- ◆ to synthesize information and promote the availability and application of this knowledge



Medical products, vaccines and technologies

- ◆ a well-functioning health system ensures **equitable access** to essential medical products, vaccines and technologies
- ◆ **quality, safety, efficacy and cost effectiveness**
- ◆ scientifically sound and cost-effective use



Medical products, vaccines and technologies

- ◆ National policies, standards, guidelines and regulations that support policy;
- ◆ Information on prices, international trade agreements and capacity to set and negotiate prices;
- ◆ Reliable manufacturing practices and quality assessment of priority products;
- ◆ Procurement, supply, storage and distribution systems that minimize leakage and other waste;
- ◆ Support for rational use of essential medicines, commodities and equipment, through guidelines, strategies to assure adherence, reduce resistance, maximize patient safety and training.



Six building blocks - financing

- ◆ A good health financing system raises adequate funds for health, in ways that ensure people can use needed services, and are protected from financial catastrophe or impoverishment associated with having to pay for them.



Revenue collection

- ◆ The process by which the health system receives money from households and organizations or companies, as well as from donors
 - general taxation
 - mandated social health insurance contributions (usually salary-related)
 - voluntary private health insurance contributions (usually risk related)
 - out-of-pocket payment
 - donations



Revenue collection

- ◆ in 60% of countries at incomes below \$1000 per capita, out-of-pocket spending is 40% or more
- ◆ only 30% of middle and high income countries depend so heavily on general taxation and health insurance



Pooling

◆ Pooling

- is the accumulation and management of revenues
- spreading risk: to ensure that the risk of having to pay for health care is borne by all the members of the pool and not by each contributor individually
- prepayment vs. out-of-pocket



Structure of health system financing

Egypt (1994/95)

Revenue collection	General taxation	Donors	Social insurance	Out-of-pocket
Pooling	Ministry of health	Other governmental	Social insurance	No pooling
Purchasing				Individual purchasing
Provision	Ministry of health	Ministry of health	Other govt. Social insurance	Private providers

United Kingdom (1994/95)

Revenue collection	General taxation	Social insurance	
Pooling	Ministry of health		
Purchasing	Health authorities	GPs	Private insurance
Provision	National health service		Private providers



Prepayment and collection (1)

- ◆ *Ministry of health*, usually heading a large network of public providers organized as a national health service, relying on **general taxation** as the main source of revenue, and serving the general population.
- ◆ *Social security organization* (single or multiple, competing or not), mostly relying on **salary-related contributions**, owning provider networks or purchasing from external providers, and serving mostly their own members (usually formal sector workers).



Prepayment and collection (2)

- ◆ *Community or provider based pooling organization*, usually comprising a small pooling/purchasing organization relying mostly on voluntary participation.
- ◆ *Private health insurance fund* (regulated or unregulated), mostly relying on voluntary contributions (premiums), which may be risk-related but are usually not income related, and are often contracted by an employer for all a firm's employees.



Provider payment mechanisms (1)

- ◆ Line item budgets
 - a fixed payment per items on the list
 - can be effective in controlling costs
- ◆ Global budget
 - can be effective in controlling costs
- ◆ Capitation
 - a fixed payment per beneficiary to a provider responsible for delivering a range of services
 - potentially strong incentives for prevention and cost control



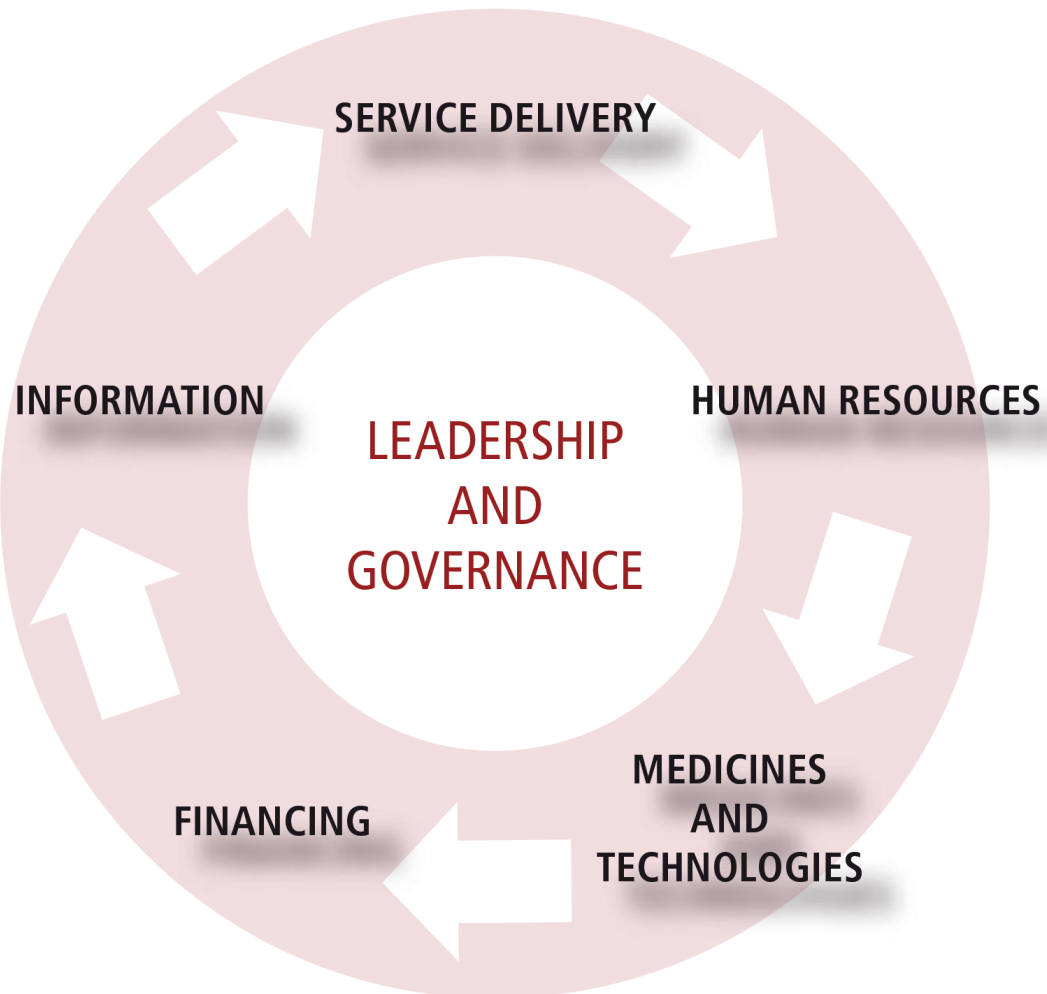
Provider payment mechanisms (2)

- ◆ Fee-for-service
 - provides strong incentives to deliver services
 - provides incentives that lead to an overall increase in the cost of the system
- ◆ Diagnostic related payment
 - a certain value is assigned to each group as the basis of payment for all cases in that group
 - without regard to the actual cost of care or duration of hospitalization of any individual case
 - provide motivation of health-care providers to cut costs



Six building blocks - governance

- ◆ Leadership and governance
 - ensuring strategic policy frameworks exist
 - frameworks are combined with effective oversight, coalition building, the provision of appropriate regulations and incentives attention to system-design accountability





Challenges: a few facts and figures (1)

- ◆ Globally, health is a US\$3.5 trillion industry, or equal to 8% of the world's GDP.
- ◆ Large health **inequalities** persist: even within rich countries such as USA and Australia, life expectancy still varies across the population by over 20 years.
- ◆ Recent essential medicines surveys in 39 mainly low- and low-middle-income countries found that, while there was wide variation, average availability was 20% in the public sector, and 56% in the private sector.
- ◆ Each year, 100 million people are impoverished as a result of health spending.
- ◆ Extreme shortages of health workers exist in 57 countries; 36 of these are in Africa.
- ◆ In over 60 countries, less than a quarter of deaths are recorded by vital registration systems.



Challenges: a few facts and figures (2)

- ◆ An estimated 50% of medical equipment in developing countries is not used, either because of a lack of spare parts or maintenance, or because health workers do not know how to use it.
- ◆ Private providers are used by poor as well as rich people. For example, in Bangladesh, around $\frac{3}{4}$ of health service contacts are with non-public providers.
- ◆ In 2000, less than 1% of publications on Medline were on health services and systems research.
- ◆ Globally, about 20% of all health aid goes to support governments' overall programs (i.e. is given as general budget or sector support), while an estimated 50% of health aid is off budget.
- ◆ There has been a rapid increase in global health partnerships. More than 80 now exist, of which WHO houses over 30.



Resources

- ◆ Human resources
- ◆ Physical capital
- ◆ Consumables, medicines



Human resource

- ◆ Human resources
 - the different kinds of clinical and non-clinical staff who make each individual and public health intervention happen



Human resource

- ◆ Three types of human resource strategy have been pursued with some success:
 - making more efficient use of available personnel through better **geographical** distribution;
 - greater use of **multi-skilled** personnel where appropriate;
 - ensuring a closer **match** between skills and functions.

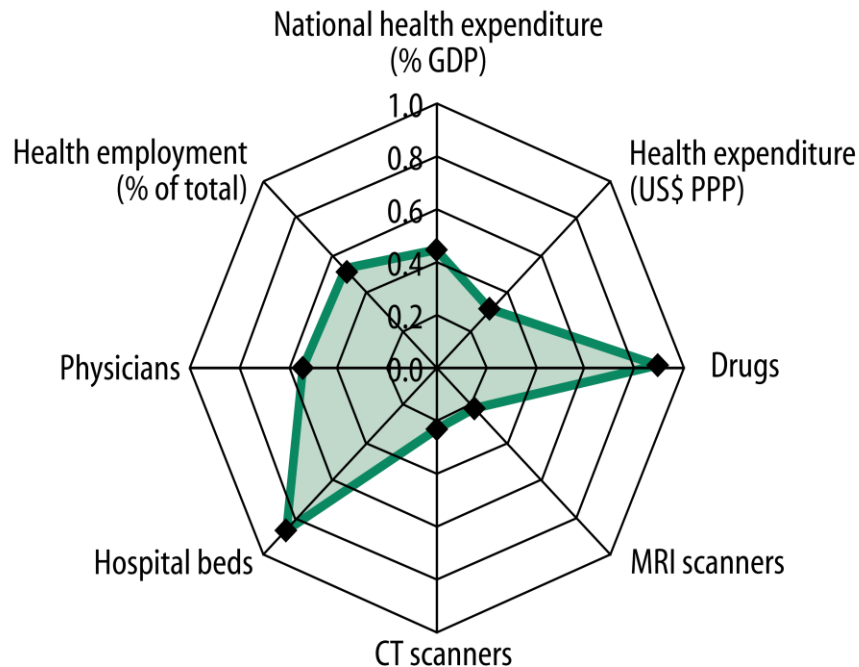


Physical resource

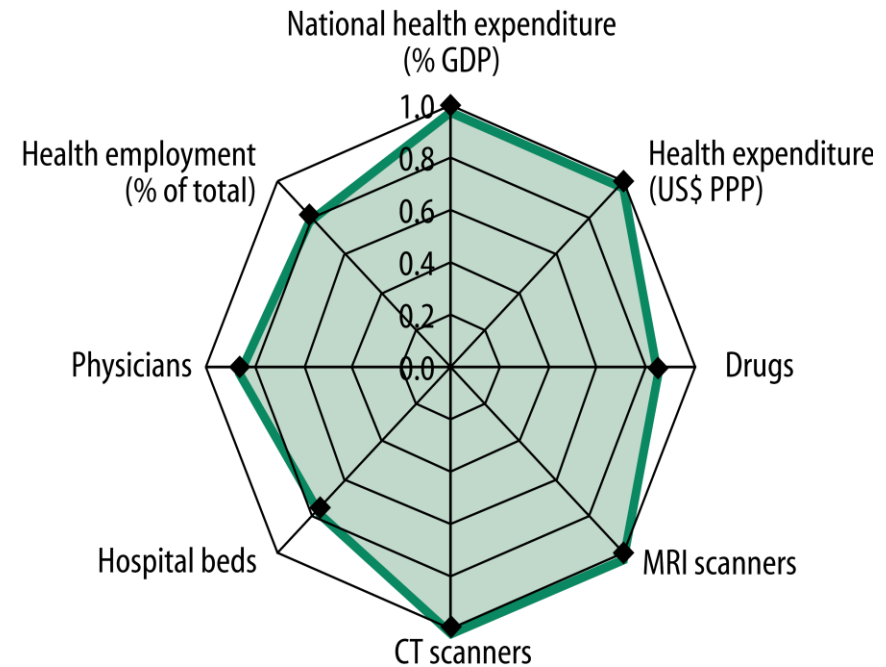
- ◆ physical infrastructure, facilities and equipment
- ◆ investments in new skills
- ◆ maintenance of the existing infrastructure

Resources – input mix

United Kingdom



United States of America



PPP= purchasing power parity.

MRI = magnetic resonance imaging. CT= computerized tomography.

Source: OECD health database 2000.

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Framework

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Goals and objectives

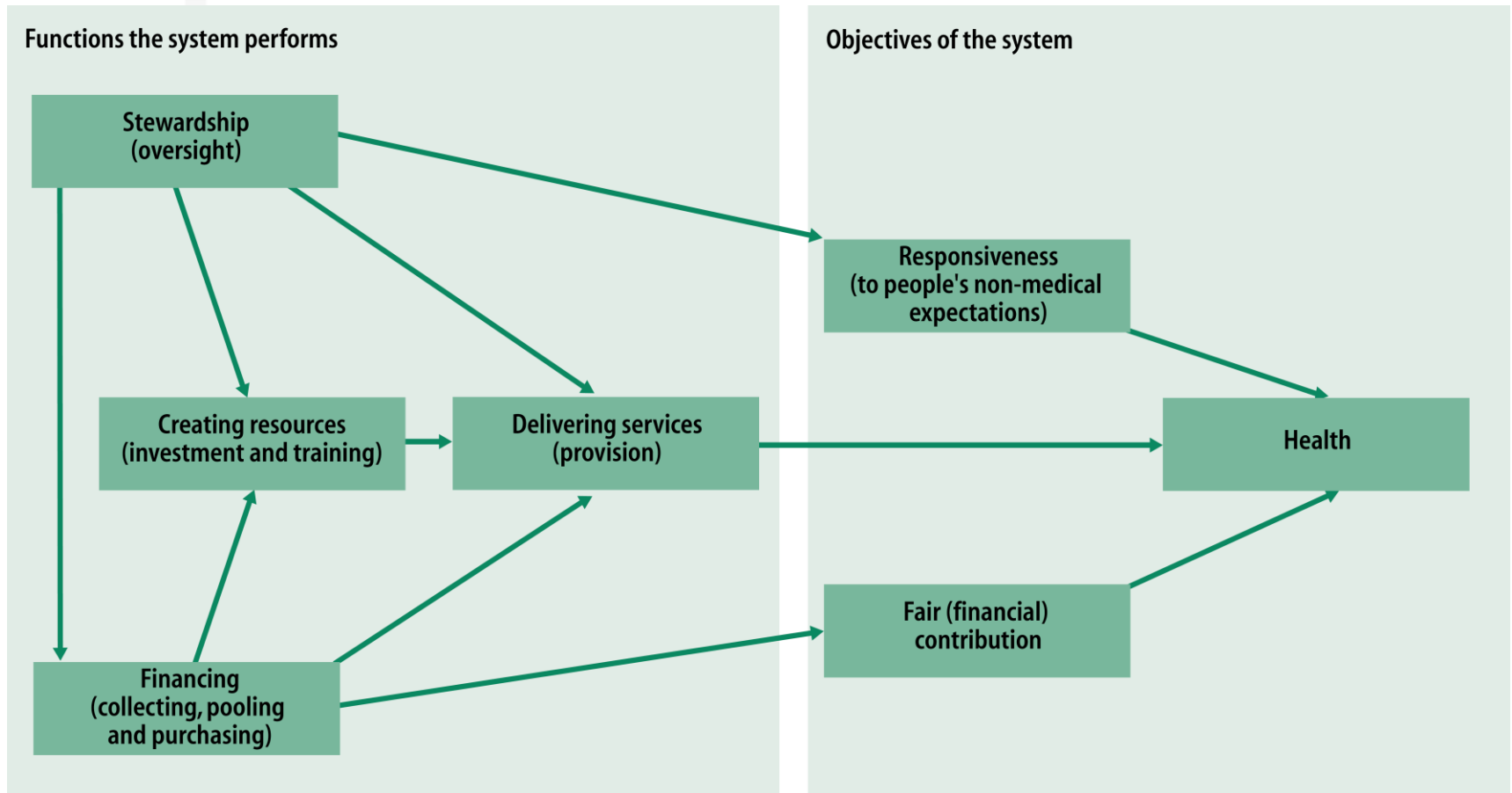
- ◆ **Main goals:** improving health and health equity, in ways that are responsive, financially fair, and make the best, or most efficient, use of available resources
- ◆ **Intermediate:** the route from inputs to health outcomes is through achieving greater access to and coverage for effective health interventions, without compromising efforts to ensure provider quality and safety.



Goodness and fairness

- ◆ The objective of good health is really twofold:
 - Goodness means a health system responding well to what people expect of it
 - the best attainable average level
 - Fairness means it responds equally well to everyone, without discrimination.
 - the smallest feasible differences among individuals and groups

Relations between functions and objectives





Measurements

- ◆ the overall level of responsiveness;
- ◆ the distribution of responsiveness;
- ◆ the distribution of financial contribution
- ◆ the overall level of health;
- ◆ The distribution of health in the population;



Responsiveness

- ◆ not a measure of how the system responds to health needs
- ◆ but a measure of how the system performs relative to non-health aspects
- ◆ meeting or not meeting a population's expectations of how it should be treated by providers of prevention, care or non-personal services



Respect for persons

- ◆ Respect for the dignity of the person.
 - not sterilizing individuals with a genetic disorder or locking up people with communicable diseases
 - humiliating or demeaning patients.
- ◆ Confidentiality, or the right to determine who has access to one's personal health information
- ◆ Autonomy to participate in choices about one's own health.
 - includes helping choose what treatment to receive or not to receive



Service based

- ◆ Timely treatment
- ◆ Making choices flexible
- ◆ Comfortable environment
- ◆ Social aspects



Fair financing

- ◆ The risks each household faces due to the costs of the health system are distributed according to **ability to pay** rather than to **the risk of illness**
- ◆ A fairly financed system ensures financial protection for everyone.
 - Household contributions to financing health — prepaid, out-of-pocket

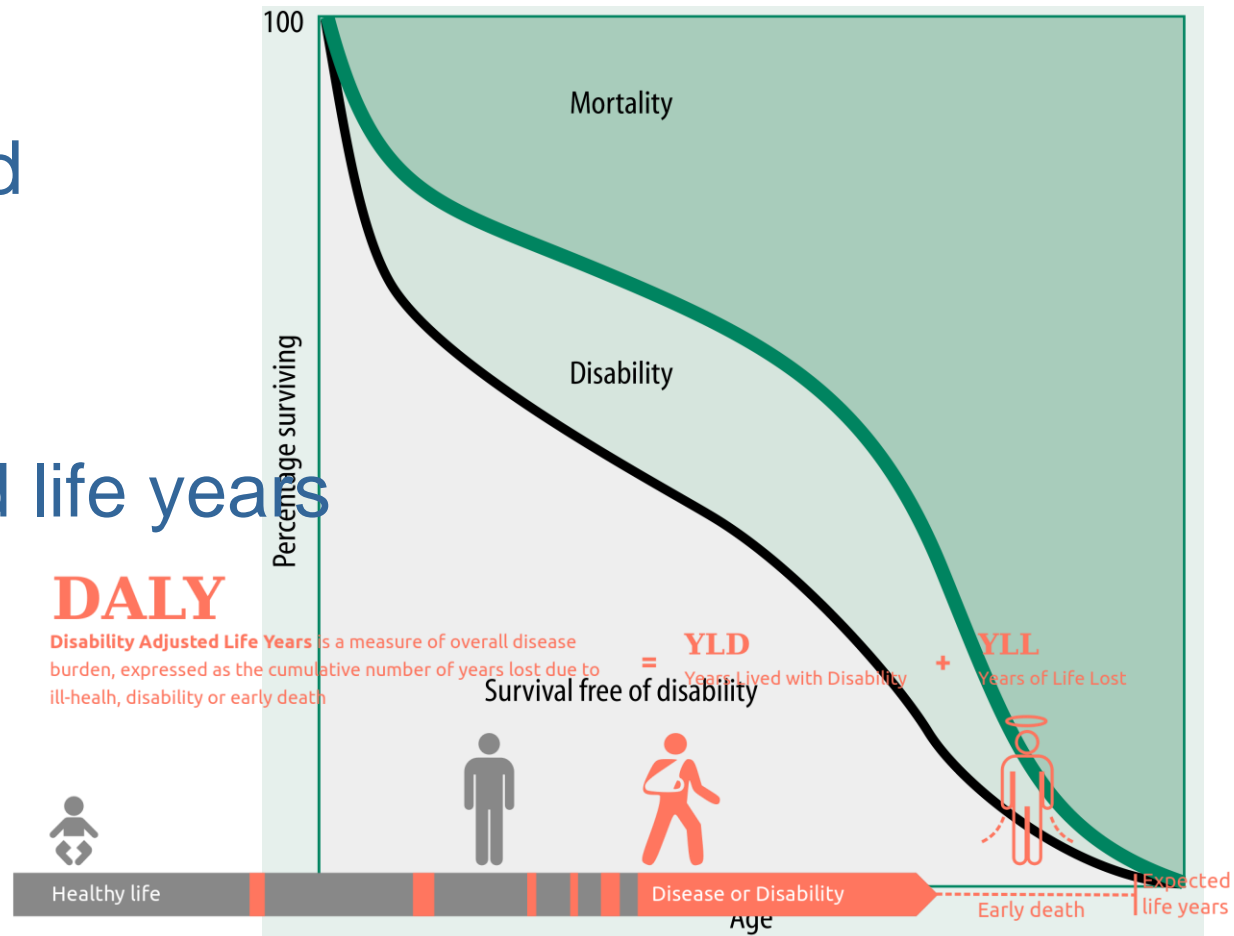
Health outcomes

◆ DALE

disability-adjusted
life expectancy

◆ DALY

disability-adjusted life years





Health outcomes

- ◆ have often been assessed in relation to inputs such as the number of doctors or hospital beds per unit of population
 - this approach indicates what these inputs actually produce
 - but it tells little about the health system's potential, what it could do if it used the same level of financial resources to produce and deploy different numbers and combinations of professionals, buildings, equipment and consumables



Examples

Rank		Member State	Disability-adjusted life expectancy (years)								
			Total population	Males				Females			
				At birth	At birth	Uncertainty interval	At age 60	Uncertainty interval	At birth	Uncertainty interval	At age 60
1	Japan	74.5	71.9	71.6 - 72.3	17.5	17.3 - 18.1	77.2	76.9 - 78.0	21.6	21.3 - 22.4	
2	Australia	73.2	70.8	70.5 - 71.3	16.8	16.6 - 17.3	75.5	75.2 - 76.2	20.2	19.9 - 20.9	
3	France	73.1	69.3	69.0 - 69.7	16.8	16.5 - 17.4	76.9	76.5 - 77.8	21.7	21.4 - 22.7	
4	Sweden	73.0	71.2	70.9 - 71.8	16.8	16.5 - 17.3	74.9	74.4 - 75.7	19.6	19.4 - 20.5	
5	Spain	72.8	69.8	69.1 - 70.6	16.8	16.4 - 17.6	75.7	75.3 - 76.6	20.1	19.8 - 21.0	
6	Italy	72.7	70.0	69.7 - 70.5	16.2	16.0 - 16.8	75.4	75.0 - 76.2	19.9	19.6 - 20.7	
7	Greece	72.5	70.5	70.2 - 70.9	16.9	16.6 - 17.3	74.6	74.2 - 75.2	18.8	18.6 - 19.5	
8	Switzerland	72.5	69.5	69.0 - 70.2	16.0	15.7 - 16.7	75.5	75.0 - 76.5	20.6	20.3 - 21.6	
9	Monaco	72.4	68.5	67.5 - 69.6	16.4	15.9 - 17.2	76.3	75.6 - 77.3	21.5	21.1 - 22.5	
10	Andorra	72.3	69.3	68.6 - 70.2	16.3	15.9 - 17.0	75.2	74.6 - 76.2	20.0	19.6 - 20.9	

Member State	HEALTH EXPENDITURE (%)							PER CAPITA HEALTH EXPENDITURE (US\$)				
	Total expenditure on health as % of GDP	Public expenditure as % of total expenditure on health	Private expenditure as % of total health expenditure	Out-of-pocket expenditure as % of total expenditure on health	Tax-funded and other public expenditure as % of public expenditure on health	Social security expenditure as % of public expenditure on health	Public expenditure on health as % of total public expenditure	Total expenditure at official exchange rate	Out-of-pocket expenditure at official exchange rate	Total expenditure in international dollars	Public expenditure in international dollars	Out-of-pocket expenditure in international dollars ^b
Afghanistan	3.2	40.6	59.4	59.4	100	2	1	28	11	17
Albania	3.5	77.7	22.3	22.3	82.5	17.5	9.5	26	6	63	49	14
Algeria	3.1	50.8	49.2	49.2	100	...	4.9	44	22	122	62	60
Andorra	7.5	86.7	13.3	13.3	100	...	38.5	1 368	182	1 216	1 055	162
Angola	3.6	59.6	40.4	40.4	100	...	18.2	47	28	19

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Good health care

7 A's

- ◆ Availability
- ◆ Adequacy
- ◆ Accessibility
- ◆ Acceptability
- ◆ Appropriateness
- ◆ Assessability
- ◆ Accountability

3 C's

- ◆ Completeness
- ◆ Comprehensiveness
- ◆ Continuity



Improving performance

- ◆ Key functions of health system
 - providing services
 - generating the human and physical resources that make service delivery possible
 - raising and pooling the resources used to pay for health care
 - stewardship – setting and enforcing the rules of the game and providing strategic direction for all the different actors involved



Public health system



Public health definition

- ◆ The science and art of preventing disease, prolonging life and promoting health through the organized efforts and informed choices of society, organizations, public and private, communities and individuals
 - Central emphasis of all public health work
 - Diverse strategies: environmental sanitation, specific disease control efforts, health education, medical care, adequate standard of living etc.
 - Social action



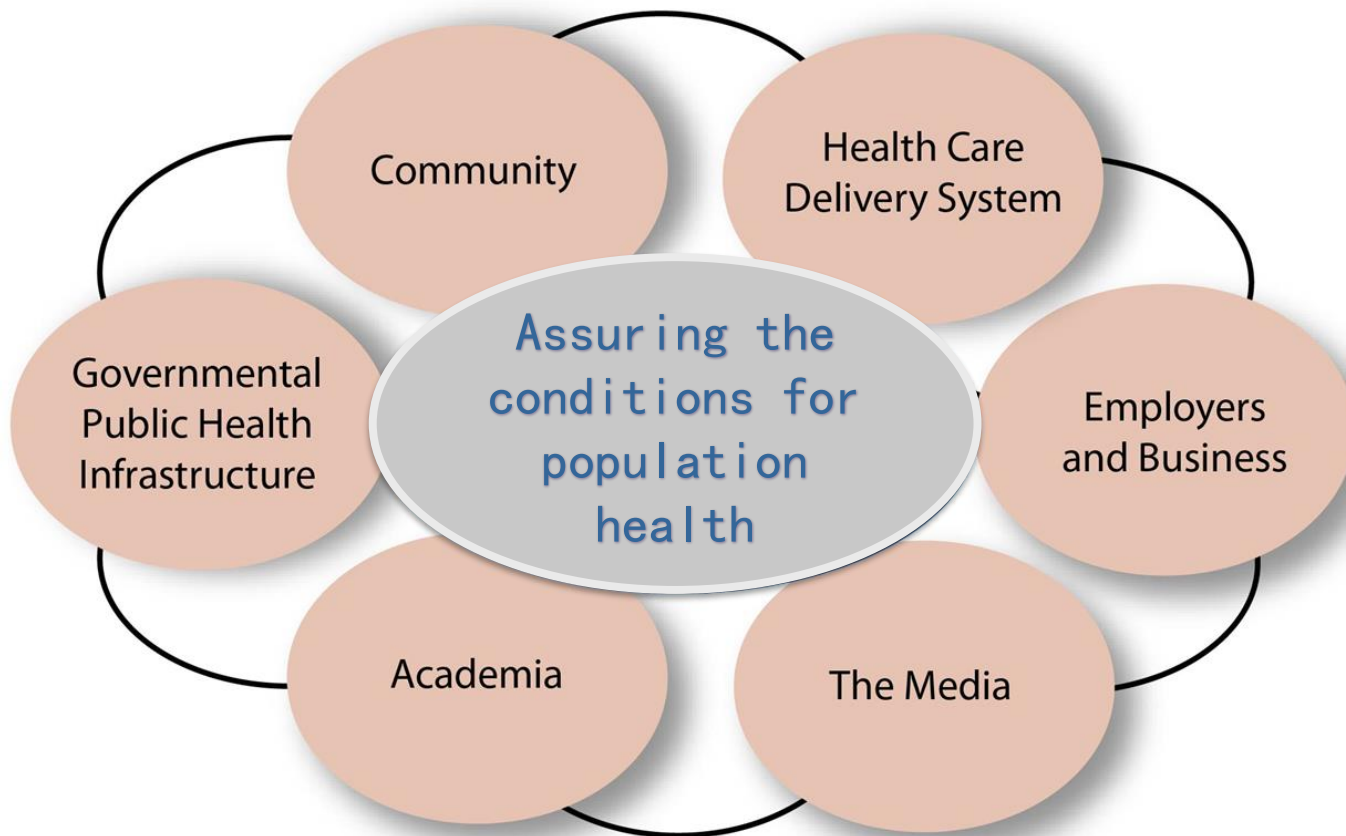
Public health system

- ◆ all public, private, and voluntary **entities** that contribute to the delivery of essential public health services within a jurisdiction



Health promotion

- ◆ Ottawa Charter, 1986
- ◆ Key areas to take action to promote health
 - Building healthy public policy
 - Creating supportive environment
 - Strengthening community actions
 - Developing personal skills
 - Re-orienting health services





Main functions

- ◆ The **assessment** and **monitoring** of the health of communities and populations at risk to identify health problems and priorities.
- ◆ The formulation of **public policies** designed to solve identified local and national health problems and priorities.
- ◆ To **assure** that all populations have access to appropriate and cost-effective care, including health promotion and disease prevention services.



Essential public health functions (1)

- ◆ Monitoring, evaluation, and analysis of health status
- ◆ Surveillance, research, and control of the risks and threats to public health
- ◆ Health promotion
- ◆ Social participation in health
- ◆ Development of policies and institutional capacity for public health planning management
- ◆ Strengthening of public health regulation and enforcement capacity



Essential public health functions (2)

- ◆ Evaluation and promotion of equitable access to necessary health services
- ◆ Human resources development and training in public health
- ◆ Quality assurance in personal and population-based health services
- ◆ Research in public health
- ◆ Reduction of the impact of emergencies and disasters on health

P

Identifying and sharing best practices; participation in research

functions





Community preventive services (1)

- ◆ Changing risk behaviors and addressing environmental challenges
 - Leading health indicators
 - Tobacco use
 - Physical activity
 - Overweight and obesity
 - Substance abuse
 - Responsible sexual behavior
 - Mental health
 - Social environment



Community preventive services (2)

- ◆ Reducing disease injury and impairment
 - Cancer
 - Diabetes
 - Vaccine-preventable disease
 - Oral health
 - Motor vehicle occupant injury
 - Violence
- ◆ Methodological background



Public health service

◆ US: eight agencies

- CDC, Centers for Disease Control and prevention
- FDA, Food and Drug Administration
- AHRQ, Agency for Healthcare Research and Quality
- ATSDR, Agency for Toxic Substances and Disease Registry
- HRSA, Health Resources and Services Administration
- HIS, Indian Health Service
- NIH, National Institutes of Health
- SAMHSA, Substance Abuse and Mental Health Services Administration



Public health service

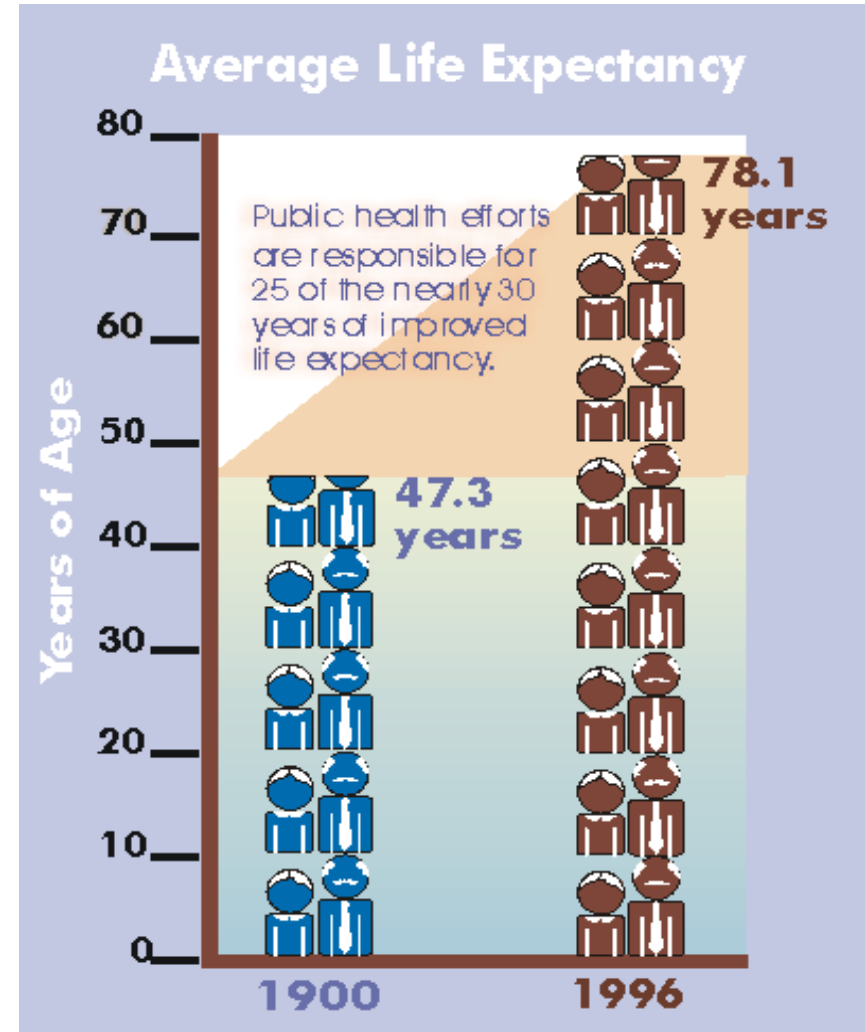
◆ China

- CDC, Centers for Disease Control and prevention
- SFDA, States Food and Drug Administration
- General Administration of Quality Supervision, Inspection and Quarantine, Institute of public health supervision,
- PHCCO, Patriotic Health Campaign Committee Office
- SAWS, State Administration of Work safety



Public health achievement

*Thanks to
public health
for the extra 25 years of life!*





Global public health achievements (1)

◆ Reductions in Child Mortality

- child mortality rate declined from 77 deaths per 1,000 live births in 2000, to 62 per 1,000 in 2009
 - expanded immunizations
 - micronutrient (particularly Vitamin A) supplementation
 - access to safe water
 - insecticide-treated bednets
 - oral rehydration therapy, antibiotics, antimalarial therapy, and antiretroviral therapies



Global public health achievements (2)

◆ Vaccine-Preventable Diseases

- an estimated **2.5 million** deaths were prevented each year among children younger than 5 years using measles, polio, and diphtheria-tetanus-pertussis vaccines

◆ Access to Safe Water and Sanitation

- Reducing global deaths from diarrheal diseases
 - Between 2000 and 2008, the proportion of the world's population with access to improved drinking water sources increased from 83 percent to 87 percent (an additional 800 million people)
 - the proportion with access to improved sanitation increased from 58 percent to 61 percent (an additional 570 million people).



Global public health achievements (3)

◆ Malaria Prevention and Control

- By 2009, the estimated number of malaria cases worldwide declined to 225 million, from 244 million in 2005, and estimated deaths decreased to 781,000, from approximately 985,000 in 2000.
- more vulnerable people in sub-Saharan Africa are now protected by insecticide-treated bednets
- more homes have been treated with indoor residual spraying, diagnosis and treatment with effective therapy is faster
- more women receive preventive treatment during pregnancy



Global public health achievements (4)

◆ Prevention and Control of HIV/AIDS

- The annual number of new HIV infections has declined steadily from an estimated 3.1 million in 2001 to 2.6 million in 2009.
- A decline has also been seen in the estimated number of AIDS-related deaths worldwide, from a peak of 2.1 million in 2004 to an estimated 1.8 million in 2009.
- expansion of provider-initiated testing and counseling, preventing mother to child transmission, improved blood safety, and antiretroviral therapy.



Global public health achievements (5)

- ◆ Tuberculosis Control
- ◆ Control of Neglected Tropical Diseases
 - Through mass drug administration and safe water programs, onchocerciasis (river blindness) in the Americas and Guinea worm and are on the verge of successful eradication or elimination.
- ◆ Tobacco Control
- ◆ Increased Awareness and Response for Improving Global Road Safety
- ◆ Improved Preparedness and Response to Global Health Threats



Task-1

- ◆ Oral presentation, no longer than 15 minutes
 - Health related information (Background)
 - Compare health system structures of two countries
 - Six building blocks
 - Resources profiles
 - Health outcomes
 - Examples of health interventions
 - Advantages and disadvantages
 - Potential improvements



Task-2 thesis

- ◆ Topic: primary health care in China
- ◆ Please include your student ID and your name
- ◆ Take proper references and format it in a scientific way



Thanks

