

Media- and Long-term Developmental Strategy and Program of Science and Technology on Population and Health

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People Oriented, Coordinated Development in an All-round Way

- Population
 - Proper scale, sound structure, good quality
 - Basic national policy, fundamental guarantee
- Health
 - Basic human right, mark of social development and progress
 - One of the core tasks: No health, no well-off life

I would like to talk...

- **Challenges and Trends**
- **Goal and Strategies**
- **Priorities and Approaches**

Six Challenges

- Population
- major diseases
- Medical Services for Communities in Urban and Rural areas
- Safety of Biological Agents, Food, and Drugs
- Health Industry
- Traditional Chinese Medicine

Analysis of Challenges

- To achieve the goal of a well-off society by the end of 2020
 - From now on
 - Increase governmental input in health
 - Improve science and technology level
 - Continually expand coverage of medical insurance
 - Thoroughly resolve health care issues in rural areas as soon as possible
 - Effectively control population and diseases

Trend 1: Predominant Role of Government

- Responsibilities of government: leading role
- Clear health goal: ensure basic health care services for people

Trend 2: Rapid Development

- System, mechanism, laws, regulations , and standards
- Basic health care security system
- Health care system
 - Medical care for weak groups

Trend 3: Progress in Science and Technology

- Rapid progress of science and technology
 - life science, systems biology
- Medical model changes
 - all-orientated, three-dimensional, multi-angle of view
- Systematic integration
 - crossing and reconstruction of disciplines

Trend 3: Progress in Science and Technology

- Biomedical technology: priorities of R&D in many countries
- Biomedical industry: one of future pillar industry
- Biomedical economy: the leading economy after information economy
- Bio-safety: key point of national security

Trends

- Solution to population and health problems
 - Is guarantee of social stability and economic development
 - Needs governmental long-term stable input
 - Needs support from science and technology
 - Needs improved mechanisms and systems

- **Challenges and Trends**
- **Goal and Strategies**
- **Priorities and Approaches**

General Guiding Principles

- **Independent innovation**
- **A leap forward in key areas**
- **Supporting development**
- **Guidance for the future**

Guiding Principles

- Population and health: complex systematic project
 - People oriented, sustained and coordinated development in an all-round way
 - Governmental leading role, legislation's insurance, society's participation, market regulation, science and technology support, systematic grasp, surpassing development

Guiding Principles

- Developmental framework for population and health
 - Independent innovation as a leading guide
 - Combination with R&D and import
 - Biomedical industry as a mainstay
 - Coordinated development of both high new technology and suitable one

Developmental Strategies

- Forward-shift strategy
 - Forward-shift of concepts, input, and research (Subjects and areas)
- Downward-shift strategy
 - Priorities shift to communities in urban and rural areas
- Pattern shift
 - Environment—Society—Psychology—Engineering—Biology model
- Systematic integration
 - Inside and outside of disciplines and systems
 - All-orientated, three-dimensional, multi-angle of view

Strategic Goal

- Four priorities Shifts

- From population quantity control centered to reasonable development of quantity, structure, and quality of population
- From medical care research in urban areas to health care research for communities in urban and rural areas
- From treatment centered to the focus on monitor, prevention and control of diseases during the whole lifespan
- From physical body centered to the focus on the comprehensive research of interaction of environment, society, psychology, and physical body

General Goal

- By the year 2020, the following should be realized
 - Safe development of population
 - Health care for all
 - Quantity, structure, and quality of population meet the needs and demands of coordinated development of well-off society
 - Health promotion approaches are popularized
 - Basic health care for all

Stage Goal

	2002	2010	2020
Total Population (Billion)	1.3	1.36~1.37	1.43~1.45
Birth Rate(‰)	12.9	13.4~14.1	11.2~11.7
Infant Mortality (‰)	28.4	15	10
Birth Defect Rate (%)	5 ±	4	3
Mortality of Pregnant Women (1/100000)	53	30	15
Life Expectancy (years)	72.9	75	78
Healthy Life Expectancy (years)	63	66	70

- **Challenges and Trends**
- **Goals and Strategies**
- **Priorities and Approaches**

Seven Prior Areas

- Population Safety, Family Planning, and Reproductive Health
- Prevention and Control of major diseases
- Health care Services and Health Promotion in Urban and Rural Areas
- Bio-safety and Food & Drugs Safety
- Health Industry and Research on Biomedical Technology
- Modernization of TCM
- Medical Biology

**The national guideline on
medium- and long-term
program for science and
technology development
(2006-2020)**

The Prior Themes on Population and Health

- Birth control, safe contraception and control of birth defects
- Prevention and control of cardio-and cerebro-vascular diseases, cancers and other major non-infectious diseases
- Control of common diseases in urban and rural communities
- Inheritance and innovative development of Traditional Chinese Medicine (TCM)
- Advanced medical equipment and medical biological materials

The Prior Themes on Public Safety

- Food security and entry-exit inspection and quarantine
- Biological security

Major Projects

- Prevention and control of some major infectious diseases, such as AIDS and viral hepatitis
- Innovative R&D of new drugs

Leading-edge Technology - Biotechnology

- Target discovery technology
- Animal and plant species and drug design technology
- Genetic and protein engineering
- Human tissues engineering based on the stem cells
- New industrial biotechnology

Basic Research on Medical and Biological Science

- Forward medical and biological science issues
 1. Quantitative research on life course and system integration
 2. Brain science and cognitive science

Basic Research on Medical and Biological Science

- Major national strategic requirements for basic research on medical and biological Science



The biological basis of human health and disease

Basic Research on Medical and Biological Science

- Major scientific research plan
 1. Protein research
 2. Study of quantum control
 3. Nanotechnology research
 4. Developmental and reproductive research

Birth Control, Safe Contraception and Control of Birth Defects

- Focus on development of
 1. safe and effective technology and products for both contraception and prevention of sexually transmitted diseases
 2. High-efficient, safely early screen, inspection and diagnosis of birth defects
 3. Biological therapy of genetic diseases

Birth Control, Safe Contraception and Control of Birth Defects

- Goal
 - By the year 2020
 - Establishment and Improvement of the supporting system to address the problems on capacity, scale, developmental trends of population
 - Control of birth defect and reproductive health-related major diseases

Prevention and Control of Major Non-Infectious Diseases

Focus on development of

1. Early prediction and diagnosis, early treatment, and prevention of risk factors of major non-infectious diseases such as cardio-and cerebro-vascular diseases, cancers etc.
2. Standardized, individualized and synthetic therapeutic technologies and projects

Prevention and Control of Major Non-Infectious Diseases

- Goal

- By the year 2020

Morbidity and Mortality of Chronic diseases such as cerebral-cardiovascular diseases, malignant neoplasm, and diabetes mellitus will be obviously decreased

Prevention and Control of Major Infectious Diseases

- Principles

 - Putting prevention first

 - Integrating prevention

- Goal

- By the year 2020

 - New infectious diseases will be effectively monitored and controlled

 - Infectious diseases such as AIDS will be under control and HBV-infected rate will be obviously decreased

Control of Common Diseases in Urban and Rural Communities

- Focus on development of
 1. Inspection, prevention, diagnosis and healing technologies of common and recurrent diseases
 2. Mini-type and transferable medical equipments for diagnosis and treatment
 3. long-distance diagnosis and treatment and service system

Control of Common Diseases in Urban and Rural Communities

- Goal
- By the year 2020
 - Improvement of health care system in urban and rural areas
 - Establishment and improvement of nationwide health promotion system in accordance with the Chinese conditions
 - Establishment and improvement of nationwide surveillance system for population, health care, diseases, and environment
 - Percentage of often exercising people and exercising quality increase further, and nationwide primary constitutional indices reach the level of moderately developed country

Inheritance and Innovative Development of TCM

- Innovative development of TCM basic theories
- Inheritance and digging of TCM experiences
- Research on diagnosis and treatment based on TCM, evaluation and standard of TCM
- R&D, production of TCM
- Protection, reasonable utilization of TCM resources
- Patent protection of TCM and international collaboration

Inheritance and Innovative Development of TCM

- Goal
- By the year 2020
 - Development and improvement of theory system of Modern TCM
 - Establishment and improvement of scientific research, TCM pharmacy engineering, and sustained utility system of resources
 - TCM industry as a new important growth point of national economy

Bio-safety and Food & Drugs Safety

- Bio-safety

- Rapid, sensitive and specific detecting techniques
- Detecting techniques for metabolite of chemical toxin in body
- New high-efficient disinfectant and rapid sterilization technologies
- Filtration and protection technology of poison
- Distinguishing and prevention technology of dangerous media
- Prevention of biological invasion
- Vaccine, immuno-adjuvant, antitoxin and drugs for emergency

- Food and Drug Safety

- Risk Evaluation for food security and entry-exit inspection and quarantine
- Location of contamination
- Establishment of standard for safety
- Efficient detection techniques
- Intelligentized prevention techniques for food contamination and high-flux inspection and quarantine techniques

Bio-safety and Food & Drugs Safety

- Goal
- By the year 2020
 - possess and master key response tech and equipment of national bio-safety and anti-bio-terrorism
 - Enter into the international advanced rank in theories, technology, and equipment for monitoring and early-warning, detection and identification, preventive vaccines and drugs, decontamination, emergency response, etc.
 - Approach the level of developed countries in researches on safety technology of food, drug, and environment

Health Industry and Research on Biomedical Technology

- Innovative research on drugs
- R & D of new medical equipment
- Applicable technology and equipment
- R & D platform for drugs

- Key technology
 - Target discovery technology
 - Animal and plant species and drug design technology
 - Genetic and protein engineering
 - Human tissues engineering based on the stem cells
 - New industrial biotechnology

Health Industry and Research on Biomedical Technology

- Goal
- By the year 2020
 - Establish and improve national drug innovation system
 - Build advanced technology platform with international criterion for new drug discovery
 - Basically realize international criterion in research, production, management of biomedicine

Basic Research on Medical Biology

- Gene language and regulation
- Functional genomics
- Model organism
- Epigenetics and non-coding RNAs
- Structure ,function and regulation network of organisms
- Reorganization of organisms
- Bio-informatics
- Computational biology
- Systematic biology
- Biological characters in extreme surroundings
- Source and evolution of life
- Developmental and evolutionary biology

Basic Research Medical Biology

- Goal
- By the year 2020
 - Establishment and improvement of national research bases for basic medicine
 - Facilitate basic medicine transition from tracking, simulating, and low-level repeating to independent innovation
 - Put forward new theory and establish new key technology in some key areas
 - Application of numerous basic scientific researches in prevention, diagnosis, and treatment for major diseases

Thank you