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STI Strategy for Preparedness and Response for Infectious Diseases from Life Security Perspective

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- "1% chance of technology shock can shake the national foundation of 100 years."
  - The spread of infectious diseases will 1) disrupt the supply chain of production following the outbreak of infectious diseases in the trading partner countries, and 2) be a fatal factor in national security to the extent it can be compared to even biological and chemical warfare, where the collapse of the national medical system is imminent.
  - It is urgent to come up with infectious disease response system from life-security perspective to strengthen resilience from the national crisis based on continuous attention and bold investment in R&D.

The security infrastructure to prepare for and respond to the national shock from infectious diseases.

#### Establishing a Permanent Response System for Infectious Diseases at the National Level

- It is important to build simulation models and apply scenarios based on data that comprehensively reflect key factors determining the aspects of infectious diseases, such as the epidemiological nature of the infectious disease, changes in human behavior in the face of pandemic, policies of the authorities and responses of medical systems.
- The key to our response to the national crisis caused by infectious diseases lies in "early detection," which requires the establishment of an information analysis and prediction system.
  - " "Early Detection guarantees Early Response"

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Source: developed by the researchers

#### Comprehensive Preparation & Response System for Infectious Diseases Centered on Government Organization Dedicated to Life and Health

- In order to prepare for and respond to the national crisis of infectious diseases, a national institution that periodically and regularly detects global infectious disease information and establishes a comprehensive strategy is required.
- The organization serves as a comprehensive control tower for infectious diseases based on three strategies: laws & information analysis infra, multidisciplinary convergence solutions, and global crisis detection.

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Goal	Establishing a government organization dedicated to life and health
3 Strategi es	(Infrastructure) Supportive legal system for active preparation and response
	multi-disciplinary research base
	(Global-sensing) Global network cooperation system for disease prediction and vaccine development

- Implementing comprehensive cooperation and governance with relevant ministries
  - A government organization dedicated to life and health prepares for life-threatening infectious diseases at all times in a comprehensive manner.
    - Fulfilling following 5 functions from the perspectives of disease response, prediction & preparation, and global cooperation
    - **1** One control tower: Preventing decentralization of crisis response activities by having one unified disease control tower
    - **2** R&D project requirement: Based on the detection and prediction analysis of infectious diseases, the government draws up areas that require national R&D promotion, and inform related ministries' R&D project promotion agencies of their direction.
    - **3** Gloal information collection: Through Global Sensing Branch, the global intelligence center collects and aggregates information from all over the world and utilizes it for analysis and prediction
    - A Research-production cooperation based on virus lab: carrying out national crisis-response A&D (acquisition & development) through the integration of virus R&D-production and distribution functions

**9** Policy reporting/cooperation: Cooperating and reporting for national policy decisions in the field of science and technology innovation

## Task 1. Establishing supportive legal system for active preparation and response

- Preparing a strong legal support system that can be applied to the wartime situation
  - Enacting (tentative) the Strategic Material and Technology Urgency Act, which integrates the national defense and industrial security to prepare and respond to infectious diseases from a 'life security' perspective
- Improving data access regarding infectious diseases
  - Establishing an organization that integrates and utilizes data at all times to prepare for and respond to infectious diseases
  - Mitigating restrictions on 'collection, accumulation and utilization' of personal information data for the purpose of predicting infectious diseases

# Task 2. Securing a system of commercialization of research and a multi-disciplinary research base

- Establishing R&D-production system and horizontal research culture
  - Strengthening knowledge in/outbound connecting R&D, production/manufacturing, and distribution
  - Creating R&D innovation by establishing a horizontal, competitive, cooperative, and convergence research culture
- Preparing a multi-disciplinary research environment and operating a group of experts
  - Joint research organization with NST, NRC and their member institutions is required. Need to make foundation for multidisciplinary research.
  - Creating a research platform that can integrate medical, veterinary, scientific, and humanistic societies in predicting infectious diseases
  - Organizing and operating multidisciplinary Scientific Advisory Groups encompassing 'humanities-science-social-economic-cultural'

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# Task 3. Establishing a global network cooperation system for forecast and vaccine development

- Making joint efforts to respond to infectious diseases by establishing a global research cooperation system
  - An international cooperative system is essential and needs to be incorporated into the network through the launch of an official organization representing the country.
- Strengthening ODA activities for infectious diseases in developing countries
  - Through 'Global Sensing Branch', sharing information on developing countries and infectious diseases in real time and participating in local infectious disease eradication activities



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