Artificial Intelligence–Driven Proactive Health: Comparison of International Governance Models and the Chinese Path

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Abstract. Against the background of the in-depth advancement of the Healthy China strategy, artificial intelligence–driven proactive health, as a new model in which technological empowerment is deeply integrated with the concept of "treating disease before its onset," has become a core pathway for resolving practical problems such as the intensification of deep population aging, the continuous rise in medical costs, and the weakness of primary-level health services in China. Research in this field possesses both practical urgency and practical value. It can not only enhance the efficiency of health management in China, but also corresponds to the demand for health security and protection covering the entire population and the whole life cycle. At the international level, the United States, Japan, Singapore, and Canada have already formed relatively mature AI-driven proactive health practice systems, and their development paradigms are highly aligned with China's core demands, thus possessing referential significance. This study will systematically review the experiences of the four countries in four aspects: policy governance logic, concrete practice implementation, incentive mechanisms, and risk supervision and regulation. By combining China's institutional advantages with its development bottlenecks, localized insights are distilled from four dimensions—systematic integration of policy systems, scenario-based implementation and empowerment of primary-level healthcare, multi-actor coordinated incentive mechanisms, and refined data supervision and regulation—so as to promote the transformation of artificial intelligence–driven proactive health in China from a policy conception into a sustainable health service system, and to provide theoretical support and practical reference for the realization of enhanced health and well-being security in China.

Keywords: Artificial Intelligence, Proactive Health.

1. Concept Definition

1.1. The Concept of Artificial Intelligence

Artificial intelligence (Artificial Intelligence, AI) refers to a technological system that enables machines to possess capabilities of learning, reasoning, judgment, and decision-making by simulating human intelligent processes [1]. Since the concept was first proposed at the Dartmouth Conference in 1956, the development of artificial intelligence has generally undergone three major waves: the early stage was dominated by logical reasoning, the middle stage was represented by expert systems and neural networks, and in recent years it has been centered on deep learning and large-model technologies, which have promoted its large-scale and extensive application in multiple fields such as proactive health [2] From the perspective of current development trends, artificial intelligence is expanding toward multiple branch directions. Among them, generative artificial intelligence and embodied intelligence are two directions with strong application potential and high levels of attention. Generative artificial intelligence, after training on large-scale data, can autonomously generate content such as text, images, and audio, and its performance is highly dependent on the quality and diversity of the training data [3], thereby providing efficient content support for health management scenarios. Embodied intelligence, by contrast, emphasizes real-time interaction between intelligent agents and the physical environment, promoting the transformation of artificial intelligence from "virtual intelligence" to "real intelligence" [4], and is well suited to the scenario-based demands of health services.

1.2. The Overview of Proactive Health

The concept of proactive health achieved a dual initiation at both the academic and policy levels in China in 2015. Experts from multiple fields provided cross-disciplinary interpretations of its core connotations, while the Ministry of Science and Technology simultaneously explicitly proposed this concept in the *13th Five-Year Plan* for "Digital Healthcare and Health Promotion." In 2016, the *Outline of the Healthy China 2030 Plan* further elevated proactive health to the level of a state strategy, and it has gradually developed into a new concept and new model that aligns with public health needs [5]."Proactive health" is a whole-process health management concept that emphasizes the active participation of individuals as the primary responsible actors in health management, is supported by technology, and is prevention-oriented. Distinguished from the traditional passive medical model centered on disease treatment [6], this concept is consistent with China's traditional wisdom of "preventing disease before its onset." Through multidimensional measures such as scientific assessment, risk prediction, behavioral intervention, and intelligent monitoring, it stimulates individuals' health awareness and behavioral capabilities, and helps individuals continuously maintain and improve their health status in daily life. The core of proactive health lies in "prevention as the priority," promoting the forward shift of the health management threshold, and highlighting the role of individuals as active practitioners of health management [7], thereby forming a continuous health maintenance process led by individuals, with the coordinated participation of families, communities, hospitals, and technological systems.

After the concept of proactive health was proposed, individuals were established as the primary responsible actors for health management. In this context, if individuals are to carry out high-quality health management and health behaviors with stronger support and clearer guidance, cutting-edge artificial intelligence becomes one of the important enabling technologies. Artificial intelligence can enhance the precision and operability of health interventions through functions such as data analysis, intelligent recommendation, and personalized services [8]. Based on this, from an international perspective, this paper selects representative countries with rich experience in the integration of artificial intelligence and proactive health practices and distinct characteristics, and conducts a systematic review and analysis of their experiences, so as to provide experiential reference for the high-quality development of the integration of artificial intelligence and proactive health in China.

2. Analysis of the Development Stages and Current Status of Artificial Intelligence and Proactive Health in China

2.1. Current Status of the Development of Artificial Intelligence Policies in China

China's engagement in the field of artificial intelligence started relatively early. From the first inclusion of AI concepts and standards in medical technology management in 2009, to its designation as a key frontier science and technology development direction in 2016, then to the focus on scenario-based implementation and industrial integration during the *14th Five-Year Plan* period, and finally to the improvement of medical AI standards and the promotion of the construction of intelligent proactive health service networks by 2025, China's artificial intelligence policy system has undergone an evolutionary process from "technological exploration" to "industrial guidance" and then to "integrated application." The policy focus has gradually shifted from basic research and talent cultivation toward scenario-based application and the expansion of cross-industry integration.

2.2. Current Status of the Development of Proactive Health Policies

The concept of "proactive health" represents an important transformation in China's health governance. From the systematic proposal of the concept in 2016, to the construction of proactive health intervention systems in 2022, then to the promotion of precision in service systems in 2024, and finally to the establishment of intelligent service networks covering the entire life cycle by 2025, China's proactive health policy system has experienced an evolutionary process from "conceptual

proposal" to "targeted intervention" and then to "intelligent integration." The policy focus has gradually shifted from the advocacy of health concepts toward technological empowerment and the expansion of full life-cycle services.

Table 1. Correspondence Table of the Coordinated Development Stages of Artificial Intelligence and Proactive Health

Year	Artificial Intelligence Field	Proactive Health Field
2009	*Administrative Specifications for Artificial Intelligence–Assisted Treatment Technologies (Trial)* (now invalid) First inclusion of AI medical technology standards	No dedicated policy; the concept had not yet been formally proposed
2016	*State Science and Technology Innovation Plan of the 13th Five-Year Plan* Artificial intelligence listed as a key frontier technology	*Outline of the Healthy China 2030 Plan* The concept elevated to a key strategy
2019	*Ethical Norms for the New Generation of Artificial Intelligence* Strengthening ethical constraints	*Healthy China Action (2019–2030)* Promoting the implementation of the concept
2022	*14th Five-Year Plan for Digital Economy Development* Promoting the integration of medical AI	*14th Five-Year Plan for State Health* Building an intervention system
2024	*Interim Measures for the Management of Generative Artificial Intelligence Services* Regulating industry development	*Key Tasks for Deepening Medical and Health System Reform in 2024 by the State Council* Building a proactive health service system
2025	*White Paper on Artificial Intelligence Standardization (2025)* Improving medical AI standards	*Several Policy Measures to Accelerate the Construction of Healthy China* Establishing an intelligent proactive health service network

In summary, artificial intelligence technologies provide instrumental support for proactive health, while the demands of proactive health promote the standardized application of artificial intelligence in medical scenarios. Policy evolution thus demonstrates a trend of deep coordination characterized by "technology empowering health and health feeding back into technology."

2.3. Policy Evolution, Supporting Conditions, and Practical Challenges of the Integration of the Two

As a major trend in population-wide health management, proactive health relies on artificial intelligence, as a frontier technological supply, to provide technical support for its intelligent development. The integration of the two conforms to the logic of the times and is underpinned by a solid foundation in three dimensions: policy, technology, and consumption.

On the policy side, from the *New Generation Artificial Intelligence Development Plan* issued in 2017, which clarified three major demonstration directions, to the State Health Commission's consecutive deployment of pilot programs for three years starting in 2022, and then to the State Development and Reform Commission, together with five ministries, focusing on specific applications in 2024, and finally to the *Opinions on the "Artificial Intelligence +" Action* in 2025, which incorporated "intelligent health terminals, personalized interventions, and smart medical and elderly care" into key areas of consumption upgrading and established supporting mechanisms for data security and ethical review, the policy focus has gradually shifted toward "full life-cycle health management," forming a multi-level support system and promoting the integration of artificial intelligence and proactive health.

On the technological side, the integration of artificial intelligence and proactive health in China possesses practical implement ability. The continuous expansion of the core AI industry, along with

the ongoing improvement of large models in the medical field, health hardware devices, and data systems, provides core support for the precise and large-scale realization of proactive health. The table below presents key indicator data on the technological dimension in an intuitive manner.

Table 2. Core Technical Indicators of AI-Driven Proactive Health in China

Core Technical Indicators	Specific Data	Data Source
Scale of Core AI Industry	CNY 900 billion	*2024 Artificial Intelligence Industry Development Report*
Number of Large Models in the Medical and Health Field	281	*2025 White Paper on the Development of Medical AI Large Models*
Installation Rate of AI-Assisted Diagnostic Software in Tertiary Hospitals	45%	*Survey on the Current Status of AI Application in Hospitals*
Penetration Rate of Health Monitoring Devices in China	42%	Equipment sales data from the State Administration of Taxation
Algorithm Accuracy of AI in Imaging Diagnosis and Chronic Disease Screening	95.3%	*Annual Report on Intelligent Medical and Health Management Research*

On the consumption side, residents' demand for health-related consumption continues to rise. In 2024, the total expenditure on medical and healthcare consumption in China reached nearly CNY 3.6 trillion, with a per capita expenditure of CNY 2,547. The compound annual growth rate from 2013 to 2024 reached 9.8%, and the annual growth rate of health consumption remained at 10.2%. Among them, 78% of the population are willing to pay a premium for AI-driven early health screening and personalized health programs, and the willingness to pay among middle- and high-income groups has increased annually, continuously releasing their payment capacity.

However, in the practical integration process in China, there remain prominent pain points. On the policy side, insufficient cross-departmental coordination and the absence of local supporting regulations result in an implementation gap characterized by "top-level enthusiasm and grassroots coldness." On the technological side, persistent data silos, delayed ethical review, and unclear responsibility mechanisms frequently lead to algorithmic "black-box" problems and privacy protection risks. On the consumption side, the digital divide among the elderly is significant, AI health service provision at the grassroots level is uneven, and the conversion rate of residents' health behaviors remains low.

In summary, the integration of artificial intelligence and proactive health in China has a solid foundation at the policy, technological, and consumption levels. At the same time, it faces practical challenges such as insufficient policy coordination, uneven technology implementation, and low resident engagement. The efficient integration and development of the two fields in the future constitutes a key research topic for achieving the goals of the *Healthy China* initiative.

3. Review and Comparison of International Experiences

Based on the above analysis, the United States, Japan, Singapore, and Canada are selected as research samples for the field of AI-driven proactive health due to their representativeness and adaptability. These countries cover different governance logics and development paradigms. Their characteristics—including technological leadership, responses to population aging, strategic support for smart initiatives, and orientation toward health equity—align closely with the development needs of the corresponding fields in China, providing sufficient comparative value.

To systematically deconstruct the specific application patterns of the four countries, the analytical framework is structured around four core dimensions: "top-level design – practice implementation – support and incentives – risk regulation." Policy serves as the implementation guarantee, concrete execution is the key to practical realization, incentives provide sustained motivation, and regulation ensures the risk bottom line. The four dimensions progress step by step, which not only conforms to

the logic of public service management research but also comprehensively deconstructs the core operational models of the four countries in the practice of AI-driven proactive health. The following analysis focuses on both the differences and commonalities among the four countries.

3.1. Analysis of Differences among the Four Countries

3.1.1. Policy Governance Logic

As the precursor and guarantee of implementation, policies in the four countries show significant differences in strategic directions, core orientations, and policy system construction in the context of AI-driven proactive health. These differences reflect the unique top-level design and planning approaches adopted by each country.

The United States centers its approach on a federal strategy, guided by the goal of maintaining global technological leadership, with a clear policy evolution trajectory. From the 2011 Federal *Robotics Initiative*, to the 2016 Federal *Artificial Intelligence Research and Development Strategic Plan*, and then to the 2025 *Winning the Competition: The United States AI Action Plan*, the U.S. has established a complete system of "strategic documents + implementation rules" [9]. Notably, the *Healthy Citizens 2030* document formally incorporated AI into disease prevention and health promotion systems for the first time, demonstrating the proactive absorption of frontier technological tools into federal health planning [10] This serves as a typical example of public policy adapting to technological change. Japan, by contrast, demonstrates long-term and continuous strategic commitment. The *Health Japan 21* series serve as the long-term framework, with the third plan, *AI-Driven Proactive Health for All*, setting quantitative targets [11]. From the 2019 *AI Health and Medical Strategy*, to the 2024 *White Paper on Strengthening Japanese Health and Medical Startups* issued by the Ministry of Health, Labour and Welfare, and finally to the 2025 *Artificial Intelligence Promotion Act*, Japan has established a closed loop of "strategy first, legislative guarantee, and industry cultivation," tailored to address its society's super-aged population.

Singapore integrates AI health policies into its *Smart Nation* vision. Its policy design demonstrates a high degree of systematization and synergy, with healthcare explicitly identified as one of the five key areas of the AI strategy for Singapore. Through the *Health SG* initiative, Singapore connects the chain from "Singapore's strategy – community services – universal participation" [12] and its forward-looking policies include AI health literacy education, reflecting long-term public policy planning to enhance public acceptance of technology [13]. Canada adopts a "consensus- and principle-based" governance model, emphasizing the establishment of unified standards during development. Based on the values outlined in the 2019 *Digital Charter*, Canada constructed implementation pathways through the 2022 *AI Health Research Strategy* and *Health Information Technology Strategy for Canada*. The 2025 *Pan-Canadian AI Health Guiding Principles* further provide a common set of values for all levels of government and institutions, achieving policy consensus between federal and provincial governments, reflecting the country's emphasis on policy alignment within a pluralistic governance structure

3.1.2. Policy Implementation Path

Policy execution and implementation constitute the main stage for translating strategic planning into practical outcomes. The four countries exhibit distinctive characteristics in their technology deployment pathways, scenario adaptation priorities, and multi-stakeholder collaborative execution models, which directly determine the effectiveness of converting policies into actual health services. Table 3 systematically summarizes the differences in focus and implementation features at the execution level among the four countries.

Table 3. Comparative Implementation Pathways of AI-Driven Proactive Health in Four Countries

Country	Core Model	Typical Application Scenarios	Key Participating Actors	Core Levers and Innovations
United States	Technology Integration with Payment Linkage	Elderly Health Monitoring; Diabetes Prevention; Public Health Forecasting	Federal Agencies; Insurance Companies; Community Organizations; Technology Enterprises	Using healthcare reimbursement as leverage, AI tools are incorporated into payment systems, forming a market-oriented "technology–payment–service" closed loop.
Japan	Industry-Academia-Research Collaborative Community Model	Elderly Care; Complication Prediction; AI Exercise Prescription	Universities; Enterprises; Community Elderly Care Institutions; Family Doctors	"Learning–Research–Industry–Application" coordinated cooperation transforms frontier algorithms into practical community tools, addressing aging-related needs.
Singapore	Centralized Platform with Full Integration	Nationwide Health Management App; Medical Imaging Assistance; Community Risk Assessment	Central Government; Public Healthcare Institutions; Family Doctors; Community Residents	A state-level platform integrates the entire chain of data and services, achieving scalable AI deployment and standardized service provision.
Canada	Community Network and Grassroots Empowerment	Community-Based Chronic Disease Management; AI Family Doctor Assistant	Non-Profit Organizations; Primary Clinics; Community Health Networks; Research Funds	Leveraging communities and grassroots healthcare networks to promote practical AI tools, enhancing accessibility and equity of services.

Across the implementation pathways of the four countries, the fundamental differences reflect the adaptation of public governance logic to local needs and capabilities. The United States, leveraging a strong technological industrial base, connects multiple stakeholders through healthcare payment mechanisms, promoting AI tool deployment through a commercialized closed loop. Japan converts technological achievements via industry-academia-research collaboration into practical community and household solutions, precisely addressing the social challenges and health demands of a super-aged population. Singapore, relying on centralized governance, integrates resources through a state-level platform, enabling scalable deployment of AI technologies and standardized service provision. Canada, with health equity as its core orientation, utilizes active community organizations and grassroots healthcare networks to ensure that technologies reach a broad population.

3.1.3. Incentive Mechanisms

Incentive mechanisms provide sustainable motivation for development. The four countries exhibit clear differences in incentive objectives, funding structures, policy tool combinations, and methods of stakeholder empowerment, forming differentiated driving systems that support the integration of artificial intelligence and proactive health. The differences in specific incentives among the countries are clearly presented in Table 4.

Table 4. Core Comparison of Incentives for AI-Driven Proactive Health in Four Countries

Incentive Tool Type	United States	Japan	Singapore	Canada
Special Funds / Targeted Subsidies	NSF *AI for Health* targeted subsidy of USD 200 million/year; HHS project funding USD 1 million	*AI Health Innovation Project* annual allocation JPY 100 billion; 2023 funding for AI blood pressure management app development	Total AI investment over the next five years exceeds SGD 1 billion; Health Innovation Fund established	CIHR annual health research funding CAD 1 billion; funding for *Health Compass II*project CAD 15.3 million
Tax Credits	*R&D Tax Credit*: 20% credit for AI R&D, increased to 25% for deployment in underserved communities	*2023 Tax System Revision Outline*: AI R&D tax credit 1%-14%, accelerated depreciation for fixed assets	AI health R&D 300% credit, additional incentives for startups during the first three years	*SR&ED Program*: 35% credit for AI health R&D
Healthcare Payment Preference	Reimbursement rate for AI remote care systems increased by 5%	Reimbursement rate for AI chronic disease management systems increased by 3%	Personal medical accounts cover health management; preventive service reimbursements higher	AI remote chronic disease management included in insurance, reimbursement aligned with outpatient services
Resident Participation Incentives	Residents authorized to share health data and participate in AI medical resource statistics	*AI Health Management Points System*: up to JPY 3,000 monthly reduction of out-of-pocket costs	Residents completing AI health assessments receive SGD 50 subsidy, participation rate 75%	Participation in AI health research, maximum subsidy CAD 200, over 32,000 participants

In summary, the differences in incentive mechanisms among the four countries reflect targeted design based on their core priorities and practical conditions. The United States focuses on a market-oriented combination of incentive tools, aligning with the needs of technology enterprises for innovation and balanced health service coverage. Japan, addressing elderly health management challenges under super-aging conditions, uses annual targeted funding, tax preferences, and resident point incentives to drive precise alignment of AI technologies with health services. Singapore, based on the *Smart Nation* strategic layout, supports AI health service deployment through substantial state investment, high-proportion R&D credits, and resident insurance subsidies. Canada, relying on targeted project funding, R&D credits, and insurance integration mechanisms, promotes the penetration of AI tools into grassroots healthcare scenarios.

3.1.4. Risk Regulation

The risk regulation system serves as the bottom line for ensuring AI-driven proactive health. The four countries emphasize different aspects of risk prevention, regulatory model selection, ethical standards, and application of regulatory tools, forming pathways adapted to their country-specific contexts.

The United States has established a multi-stakeholder regulatory model involving "government–industry–professional organizations–research institutions." At the federal level, AI risk management frameworks provide "risk adaptation" guidelines, while 42 states have enacted differentiated laws to constrain AI. Industry organizations issue self-regulatory principles, and technology giants develop transparency tools [14], highlighting the core role of self-regulation.

Japan emphasizes strict administrative supervision and ethical constraints. The *Act on the Protection of Personal Information* requires health AI systems to adopt "pseudonymization + blockchain encryption" technologies, and the Ministry of Health, Labour and Welfare has established

the *AI Data Review Committee* to achieve full annual safety assessments [15]. Simultaneously, the AI Ethics Committee released the *Ethical Guidelines for Health AI*, explicitly prohibiting algorithmic discrimination [16]. Singapore features the development of globally leading specialized standards as its regulatory approach. In 2024, it released the world's first *AI Safety Standard for the Health Sector*, proposing differentiated and quantitative verification requirements for AI applications with varying risk levels [17]. The Personal Data Protection Commission requires the use of "privacy-preserving computation" to achieve "data usable but not visible," balancing data utilization and privacy protection through technical means. Canada exhibits a progressive governance approach with an ethical orientation. It emphasizes strict enforcement of the *Personal Health Information Protection Act (PHIPA)*, requiring AI systems to obtain resident consent. For example, machine learning–based medical devices established by Health Canada are continuously monitored post-market for performance. Ethical guidelines also ensure the health rights of vulnerable local populations [18], reflecting a high degree of attention to fairness and justice in public policy.

3.2. Common Experiences of the Four Countries and Their Adaptability to China

In terms of policy positioning, all four countries have incorporated AI-driven proactive health into the core agenda of country-level public health and technological development. Through top-level design, they have clarified development directions and established comprehensive public policy systems, with the core objectives of improving country-level health levels and healthcare system efficiency. In terms of practical implementation, all four countries rely on existing public healthcare service systems, break administrative barriers through cross-departmental coordination, and link multiple stakeholders to embed AI technologies precisely into practical scenarios such as chronic disease management and elderly health, promoting the deep transformation of policies from planning to service delivery. Regarding incentive mechanisms, all four countries have built diversified incentive systems, using multiple policy tools to encourage enterprises, research institutions, and healthcare organizations to engage in AI health research and applications, guiding social resources to focus on the development of AI-driven proactive health. In terms of regulatory frameworks, they generally adhere to the principles of "prudent inclusion and risk adaptation," promoting technological innovation while simultaneously ensuring data security, algorithmic fairness, and other risk controls, forming a "multi-stakeholder co-governance" approach that balances efficiency and cost with fairness and justice.

From the perspective of adaptability, China shares multiple points of alignment with these four countries in the field of AI-driven proactive health. These points of convergence not only anchor the application scenarios of AI technologies but also correspond to the core needs of proactive health, which constitutes the central value of this study. The alignment with the United States lies in China's comparable AI research and development capabilities and market application domains. Both countries have incorporated AI-assisted diagnostic technologies and other proactive health-related tools into medical insurance reimbursement systems. Moreover, the medical inflation challenge faced by the U.S.—the sustained rise of healthcare expenditure as a percentage of GDP—is also a key issue China will need to address in the future. The adaptability with Japan focuses on China's similarly deep aging population challenge. The demand for AI-driven proactive health applications in community elderly care and chronic disease management is urgent, and the inherent uncertainty of healthcare information requires AI algorithms to enable precision in elderly health services. Coupled with China's institutional advantage of cross-departmental coordinated policy implementation, this facilitates the rapid deployment of such AI-driven proactive health services. The alignment with Singapore lies in the fact that China has essentially established a countrywide population health information platform, matching Singapore's foundational health data integration. This platform can be leveraged to integrate resident health data, supporting the scalable deployment of AI-driven proactive health services. China can also draw lessons from Singapore's use of technical measures to balance data utilization and privacy protection. The adaptability with Canada is reflected in a shared focus on health equity. China similarly emphasizes the universal provision of primary healthcare

services. AI-driven proactive health technologies can supplement gaps in grassroots medical resources, safeguarding the health rights of vulnerable populations. These similar development foundations and core priorities indicate that the experiences of the four countries can be precisely adapted to China's actual development needs in AI-driven proactive health, providing important support for exploring localized integration pathways.

4. Implications for Promoting the Integration of AI and Proactive Health in China

Based on the aforementioned development foundation and international experience comparisons, promoting the deep integration of AI and proactive health in China should leverage the country's super-large market, robust digital infrastructure, and institutional advantage of concentrating resources on major tasks, while directly addressing challenges such as development imbalance and weak grassroots service capacity. The goal is to construct a new paradigm of AI-driven proactive health with Chinese characteristics.

4.1. Policy Logic: Strengthening Top-Level Design and System Integration to Evolve Policies from "Fragmented" to "Systematic"

China has a relatively complete policy system for integrating AI and proactive health, with the core objective of promoting precise alignment between AI and proactive health, achieving efficient allocation of resources, and meeting public health demands. However, in terms of specific policy planning, there remain critical issues such as insufficient cross-departmental coordination, weak local adaptability, and mechanical integration of the two fields, which need urgent resolution. On one hand, it is necessary to establish a coordinated governance policy mechanism under centralized leadership, involving multiple departments such as the State Health Commission, Ministry of Science and Technology, and Medical Insurance Bureau, with a focus on AI-driven proactive health, and to build an integrated system among policy subsystems. For example, the State Health Commission should anchor community and elderly population scenarios, clarifying the core needs of proactive health services; the Ministry of Science and Technology should provide targeted support for the research and development of core AI technologies adapted to proactive health, such as intelligent chronic disease early-warning algorithms and elderly proactive health monitoring tools; the Medical Insurance Bureau should include mature AI-driven proactive health services in payment coverage, shifting policies from "dispersed support for technology or single health domains" to "focused support for the integration and implementation of AI and proactive health."On the other hand, a layered system of "state strategy + local adaptation" should be established. At the state level, core objectives for the implementation of AI-driven proactive health should be clearly defined; at the local level, implementation plans should be refined according to regional characteristics. For instance, regions with high aging populations should prioritize AI elderly health monitoring tools, while areas with weak grassroots resources should focus on the downward deployment of AI proactive health services. While fully leveraging the continuity advantage of China's policies, attention must also be paid to addressing regional disparities that lead to uneven proactive health services.

4.2. Implementation Path: Leveraging Digital Advantages, Focusing on Scenario-Driven Approaches and Grassroots Empowerment

China possesses advantages in AI medical algorithms, health monitoring, and other digital infrastructure. However, current technologies are largely focused on improving supply-side services and have not sufficiently driven individual proactive participation. Moreover, weak grassroots health service capacity remains a core challenge for the practical implementation of AI-driven proactive health in China. Therefore, the execution pathway must anchor on individual proactive participation and transform data advantages into actionable outcomes, while maintaining a downward focus. First, by constructing a unified state health data-sharing platform, a linkage among "individual – smart

device – AI – community – hospital" can be realized. Individuals upload real-time health data through home-based smart monitoring devices, AI-based systems generate personalized proactive health recommendations, which are simultaneously pushed to community health centers, where doctors provide targeted responses and supplements. This allows individuals to clearly perceive changes in their health status, shifting from "passive treatment" to "active health management." Second, pilot scenarios should be established to make the implementation of AI-driven proactive health more tangible. For example, using chronic disease management as a pilot, AI continuously tracks individuals' daily health data, automatically triggers risk fluctuation alerts, and coordinates with hospitals to implement tiered management and care. This enables individuals to actively participate in maintaining their own health while supplementing gaps in grassroots service capacity. Once these practices are successfully implemented, the model can be gradually extended to other scenarios such as maternal and child health care, ultimately realizing the transformation of technological tools into individual proactive health actions, ensuring the equity and accessibility of public health services.

4.3. Incentive Mechanisms: Stimulating Multi-Stakeholder Collaboration to Facilitate AI-Driven Proactive Health

China possesses a vast health consumption market and a vibrant industrial sector, necessitating the construction of a sustainable incentive framework for multiple stakeholders, including government departments, market actors, and residents. First, incentives should encourage government departments to participate collaboratively. AI-driven proactive health can reduce acute exacerbations of chronic diseases and lower healthcare expenditures, aligning closely with the core needs of medical insurance authorities. By linking the insurance departments, mature AI-driven proactive health services can be included in the reimbursement catalog, while performance incentives can be provided to health authorities responsible for promoting these services, motivating them to actively implement policies. Second, market actors should be activated for innovation. Technology enterprises engaged in developing AI proactive health tools can be granted R&D tax deductions. Through government procurement, AI health devices adapted for grassroots deployment can be purchased in bulk, while social capital investment can be guided and incentivized. Third, residents' proactive participation should be encouraged. Residents who upload health data via smart devices and complete AI-driven proactive health intervention plans can accumulate "health points," which can be redeemed for reduced out-of-pocket insurance costs, free community health assessments, and other services, directly enhancing individual willingness to engage in AI-driven proactive health. Through this multi-stakeholder incentive mechanism, AI-driven proactive health can be transformed from policy conception into practical services, forming a virtuous cycle.

4.4. Risk Regulation: Balancing Innovation and Safety by Establishing an Agile and Inclusive Governance Framework

In the face of rapidly evolving technology and potential risks to data security and algorithmic fairness, the regulation of AI-driven proactive health must follow the principle of "safety first, public welfare foremost," evolving from a "one-size-fits-all" approach to a "refined and agile" regulatory framework. First, a risk-based, classified regulatory system should be established. In the AI + proactive health domain, low-risk applications should be subject to simplified procedures and encouraged for innovation, while high-risk applications should undergo strict entry control and continuous monitoring to ensure service safety and controllability. Second, data security and privacy protection should be strengthened. For collected resident health data, privacy-preserving computation technologies should be promoted to achieve "data usable but not visible." Boundaries for health data collection and usage should be clearly defined, and residents' informed consent and data authorization rights must be implemented, alleviating public concerns over personal health data breaches. Finally, a full life-cycle monitoring mechanism should be perfected. Companies developing AI proactive health tools must regularly submit algorithm performance and safety risk reports. In the event of algorithmic bias, performance degradation, or other issues, services must be promptly withdrawn and

corrected to ensure fairness and effectiveness, safeguarding the public health welfare baseline. This regulatory framework allows sufficient room for experimentation and innovation in AI-driven proactive health while simultaneously consolidating risk prevention measures, ensuring compliant and safe implementation.

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