Post-Print of the Expert Consensus on Health Promotion Strategies for Adult Vaccination in China

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Abstract

Vaccine-preventable diseases impose a substantial health burden on adults, and numerous gaps in China' s adult immunization programming urgently require attention and resolution. The Expert Consensus on Health Promotion Strategies for Adult Vaccination in China was led by the Institute for Healthy China at Tsinghua University, the School of Public Health at Peking University, the School of General Practice at Southern University of Science and Technology, and the Professional Committee on Public Health Security and Health of the Society of Public Safety Science and Technology, in collaboration with experts and scholars from multiple domestic institutions. This consensus integrates evidence-based scientific evidence and practical wisdom from multidisciplinary experts in immunization promotion-related fields, providing scientific, systematic, and actionable recommendations on the necessity and health value of adult vaccination, the current status and challenges of China' s adult vaccination service system, and—grounded in the theory of medical-preventive integration—the promotion of vaccine prescription by general practitioners and the development of strategic planning for adult immunization. It aims to provide scientific guidance for government decision-making departments, public health institutions, healthcare providers, and health promotion practitioners, and to advance vaccination efforts for priority adult populations from a life-course perspective.

Full Text

Preamble

Expert Consensus on Health Promotion Strategies for Adult Vaccination in China

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Abstract: Vaccine-preventable diseases impose a substantial health burden on adults in China, highlighting urgent gaps in the current adult immunization program that demand immediate attention and resolution. This Expert Consensus on Health Promotion Strategies for Adult Vaccination in China was developed through collaboration among experts from multiple institutions, led by the Institute for Healthy China at Tsinghua University, the School of Public Health at Peking University, the School of General Practice and Health Management at the Southern University of Science and Technology, and the Public Health Security and Health Committee of the China Society of Public Safety Science and Technology. Integrating evidence-based research and practical wisdom from multidisciplinary experts in immunization promotion, this consensus addresses the necessity and health value of adult vaccination, the current status and challenges of adult vaccination services in China, and expert recommendations for advancing integrated medical-preventive care, promoting vaccine prescriptions by general practitioners, and developing a national adult immunization strategy. The consensus aims to provide scientific, systematic, and actionable guidance for government policymakers, public health agencies, healthcare providers, and health promotion practitioners to facilitate vaccination efforts for key adult populations from a life-cycle perspective.

Keywords: Adult vaccination; Health promotion; Expert consensus; Immunization program

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1. Consensus Development Methods

This consensus was initiated by the Institute for Healthy China at Tsinghua University, the School of Public Health at Peking University, and the Public Health Security and Health Professional Committee of the Public Safety Science and Technology Society. The project commenced in April 2025, with a five-month writing period, external review in September 2025, and finalization in September 2025. All experts and working group members signed written conflict-of-interest declarations, confirming no conflicts of interest with pharmaceutical

companies related to this consensus.

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1.1 Target Users and Population

The consensus targets government decision-making departments, public health institutions, healthcare providers, and health promotion practitioners. It aims to guide these stakeholders in scientifically developing and implementing vaccination strategies for adult populations from a life-cycle perspective.

1.2 Consensus Development Group

The consensus development group comprised three teams: an expert panel, a writing group, and a secretariat. The expert panel included 47 members selected based on their extensive theoretical and practical experience in vaccination and related disciplines, covering fields such as health policy, health promotion, vaccine immunology, and guideline methodology. Their primary responsibilities were overall evaluation, deliberation, revision, and finalization of the consensus. The writing group consisted of experts with backgrounds in general practice, guideline methodology, immunization planning research, and practice, responsible for drafting and revising the consensus. The academic secretariat managed literature retrieval, coordination, manuscript compilation, and verification.

1.3 Literature Search

Using keywords including "adult vaccine," "adult immunization," "immunization program," "immunization service system," "adult vaccination," "vaccination in adults," "adult vaccine uptake," "vaccine uptake," "immunization program," "immunization policy," "immunization delivery system," "vaccination infrastructure," and "immunization service provision," we systematically searched PubMed, Web of Science, Embase, Scopus, CNKI, Wanfang Data, and relevant websites of the National Health Commission, National Disease Control and Prevention Administration, and Chinese Center for Disease Control and Prevention. The search included guidelines, consensus statements, systematic reviews, meta-analyses, and randomized controlled trials from database inception to July 30, 2025, without language restrictions. Based on the retrieved evidence and summarized recommendations, the writing group prepared the initial draft, which underwent multiple rounds of expert meetings for discussion, review, and finalization.

1.4 Evidence Quality and Recommendation Strength

The expert panel scored each recommendation using a Likert scale (1-5 points), where 5 indicated "strongly agree" and 1 indicated "strongly disagree." Consensus was defined as the proportion of experts scoring 5 points (43 experts voted). A consensus level exceeding 80% resulted in a strong recommendation. This consensus formulated 18 recommendations, all of which achieved consensus.

1.5 Conflict of Interest Declaration

All experts participating in the consensus development process signed written conflict-of-interest statements, confirming no relevant conflicts with pharmaceutical companies.

1.6 Publication, Dissemination, and Update

To promote dissemination and application in vaccination practice, the consensus will be published in professional journals and subsequently disseminated nationwide through academic conferences and training workshops. The consensus development working group will conduct regular literature searches, evidence updates, and evaluations, with plans to update the consensus every 3-5 years.

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2. Necessity and Health Value of Adult Vaccination

Recommendation 1: Vaccination is the most cost-effective means of preventing and controlling infectious diseases, reducing the incidence, severity, and mortality risks of multiple infectious and some chronic diseases. As infectious diseases pose increasing challenges to public health emergency systems and population aging accelerates, the public health value of adult immunization becomes increasingly prominent, necessitating comprehensive and robust promotion of adult vaccination. (Consensus level: 95.7%)

Interpretation and Evidence: Under the Healthy China Strategy, President Xi Jinping has emphasized prioritizing people' s health in development and providing comprehensive, life-cycle health protection [1]. This guiding principle sets the direction for China' s public health development, with immunization planning as a critical tool for disease prevention and population health protection that requires comprehensive implementation. Current gaps in China' s adult immunization program demand urgent attention. Vaccine-preventable diseases impose a heavy health burden on adults [2], with co-infections causing particularly severe mortality [3]. Vaccination is the most economical and effective public health intervention, preventing over 30 life-threatening diseases and infections, and preventing 3.5-5 million deaths annually from diphtheria, tetanus, pertussis, influenza, and measles [4]. Beyond acute infectious diseases, vaccines are increasingly used to prevent and control certain chronic diseases [5], significantly reducing disease burden and mortality [6]. For example, herpes

zoster incidence rises markedly with age; seasonal influenza vaccination reduces hospitalization and mortality rates by 45% and 38% respectively among elderly diabetic patients and is associated with reduced cardiovascular mortality risk [7]. Receipt of the 23-valent pneumococcal polysaccharide vaccine (PPV23) is associated with reduced hospitalization duration and lower risk of severe in-hospital events compared with non-recipients [8]. Among patients hospitalized with acute heart failure, influenza vaccination during hospitalization improves survival and reduces readmission risk within 12 months [9]. However, public awareness of vaccination for preventing infection and reducing severe disease and mortality remains low among older adults and the general population [10], and even healthcare professionals exhibit “vaccine hesitancy” [11]. The adult vaccination service system also remains inadequate [12].

The WHO’ s Immunization Agenda 2030 (IA2030) emphasizes life-course immunization and the goal of “leaving no one behind,” while the “Healthy China 2030” Planning Outline explicitly calls for shifting from a child-focused approach to an immunization strategy covering all populations and life stages [13-14] to achieve additional public health benefits at relatively low incremental costs. As infectious disease challenges to public health emergency systems increase and population aging accelerates, the public health value of adult immunization becomes ever more prominent. Globally, millions still fail to benefit from vaccines that prevent severe disease and death, while “anti-vaccine sentiment” persists and “vaccine hesitancy” has been listed among WHO’ s top ten global health threats [15].

Although China has achieved remarkable success in preventing vaccine-preventable infectious diseases [16], adult vaccination coverage remains extremely low. In 2021, PPSV23 coverage was only 0.06% among adults aged 18-59 and 1% among those $ 60*years*; *humanpapillomavirus*(*HPV*)*vaccinefirst* − *dosecoverageamongadultwomenwas*2.34 $60 years). Adult vaccination relies primarily on out-of-pocket payment, with limited medical insurance and government subsidy coverage. Only a few regions have incorporated vaccines for older adults or high-risk groups into public programs or medical insurance reimbursement pilots, making it difficult to establish a national 保障 mechanism [17]. On September 26, 2025, the State Council’ s Joint Prevention and Control Mechanism issued a notice on COVID-19 and key infectious disease prevention and control for autumn/winter 2025 [18], explicitly calling for strengthened vaccination and medical treatment, active mobilization of key populations to receive influenza, COVID-19, and pneumococcal vaccines, exploration of vaccine prescriptions for appropriate populations, encouragement of free vaccination for high-risk groups in qualified regions, and maintenance of high coverage for national immunization program vaccines with targeted supplementary vaccination in areas with weak routine immunization.

3. Current Status and Challenges of China' s Adult Vaccination Service System

Recommendation 2: China' s current immunization program focuses on children; it is essential to actively expand adult immunization channels and improve the service system. (Consensus level: 93.6%)

Interpretation and Evidence: China' s immunization program currently prioritizes children, with adult services primarily provided through healthcare facility vaccination units. The traditional model utilizes child vaccination clinics during off-peak hours; recently, some regions have established independent adult vaccination clinics or expanded services through rabies clinics. A few provinces and municipalities encourage high-risk groups to receive non-national immunization program vaccines such as influenza, pneumococcal, and HPV vaccines through free or medical insurance reimbursement programs (e.g., free vaccination for "one elderly and one child,"healthcare workers). The 2020-2021 national COVID-19 vaccination campaign rapidly established a four-tiered service network covering national, provincial (municipal/autonomous region), municipal, and county levels, accumulating digital management experience and achieving interconnection between immunization information systems and cross-provincial data sharing. This experience demonstrated the capacity to rapidly expand immunization service systems during public health emergencies, providing valuable lessons for future routine adult vaccination service system development. Recent efforts have strengthened primary healthcare infrastructure and general practitioner systems, with some regions exploring integration of adult vaccination into community health and chronic disease management processes, such as piloting "vaccine prescription" models that enable general practitioners to assess vaccination needs and provide recommendations during routine care [23]. At the information system level, efforts are underway to establish electronic vaccination records and reminder systems, integrating adult vaccination records into public health information platforms to achieve interconnectivity.

However, while promoting adult vaccination, it is equally important to upgrade and expand childhood immunization planning. Where resources are limited, priority should be given to enhancing childhood immunization, such as replacing all live attenuated polio vaccines with inactivated vaccines and adding vaccines to the national immunization program for diseases with severe burden and proven vaccine safety and efficacy, such as influenza and varicella vaccines.

Internationally, pneumococcal vaccine coverage among U.S. adults $ $65 years reached 64% in 2022, yet comprehensive age-appropriate vaccination coverage among all adults remained only 22.8% [19]. The U.S. has established a national-level adult vaccination program with strengthened infrastructure and regular recommendation mechanisms [20]. Japan lists 18 vaccines as legally mandated "routine immunizations," with varicella vaccine coverage rapidly exceeding 95% after inclusion, while pneumococcal vaccine coverage (partially self-paid) among older adults was only 33.5%. Although EU countries generally recommend free

influenza and pneumococcal vaccination for those $ $65 years, average influenza vaccination coverage in 2018 was only 45%, far below the 75% policy target [21]. Influenza vaccination rates among heart failure patients are relatively high in Western Europe and the U.S. (~60%) but estimated below 1% in China [22]. Most developed countries promote adult immunization through multiple measures including medical insurance coverage, fiscal subsidies, and active healthcare worker recommendations, while China remains in the initial stages with its relevant institutional systems requiring systematic development and exploratory roadmaps.

Recommendation 3: The main challenges facing adult vaccination are insufficient service accessibility and convenience, high costs, vaccine hesitancy, sustainability issues for non-national immunization program vaccination units, and inadequate motivation among vaccination personnel. (Consensus level: 85.1%)

Interpretation and Evidence: Vaccination services face multiple burdens: decreasing numbers of vaccination units, insufficient coverage in remote areas, increasing vaccination tasks (delayed catch-up, routine immunization, influenza, COVID-19 vaccines) that strain service capacity, and demands for stronger organizational and service capabilities during mass vaccination campaigns.

From the public perspective, low adult vaccination rates in China primarily stem from trust issues, complacency, and convenience barriers. (1) Trust: Confidence in vaccine safety, efficacy, and the health system/vaccination personnel, with safety concerns being the main driver of "vaccine hesitancy." (2) Complacency: Underestimation of disease severity and doubt about vaccine necessity. (3) Convenience: Vaccine supply capacity, price acceptance, and service accessibility. Adult vaccination willingness is closely related to health education, with misconceptions that vaccination is only for children, while clinical experts' recommendations significantly influence patients' choices [24]. Therefore, it is essential to engage clinical doctors in the vaccination service system and conduct multi-sectoral health education to correct misconceptions.

Overall, China' s adult vaccination faces multiple bottlenecks [25]: (1) Low coverage: Non-national immunization program vaccines require out-of-pocket payment, resulting in generally low willingness [26]. (2) Incomplete payment mechanisms: Most adult vaccines are not covered by medical insurance or public programs, with insufficient government subsidies and insurance coverage; only a few local pilots (e.g., free influenza, insurance-reimbursed pneumococcal vaccines) cover small populations with poor sustainability. (3) Inadequate service system: Existing adult vaccination points are concentrated at municipal/county CDCs and general hospitals, with low coverage at community health centers and township hospitals, and scarce vaccination points in rural areas. (4) Insufficient professional workforce: Current vaccination personnel and equipment primarily serve childhood immunization, with minimal training investment in adult vaccination. (5) Inadequate public awareness: Adults generally have low vaccine awareness and insufficient understanding of personal infection risks and immunization benefits. (6) Low attention from some healthcare workers: Poor recom-

mendation rates. (7) Absent legal policies: The current Vaccine Administration Law focuses on childhood immunization, lacking systematic institutional design and mandatory requirements for adult vaccines [27]; no unified national adult immunization program or recommendation scheme exists, with inconsistent local standards. (8) Healthcare facility construction difficulties: Lack of clear policy support and incentive mechanisms for establishing adult vaccination clinics, constrained by resource constraints, clinical prioritization over prevention, and "vaccine hesitancy" among personnel [26]. Overall, China' s adult vaccination system started late and remains imperfect, requiring strengthened top-level design and inter-departmental coordination.

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4. Integrated Medical-Preventive Care and Coordinated Adult Immunization Progress

Recommendation 4: Enhance vaccination service quality and standards through integrated medical-preventive care, establish appropriate standards when setting up vaccination clinics in healthcare institutions, improve supporting measures, connect hospital information systems with vaccination information systems, and streamline payment and vaccination processes within healthcare institutions. (Consensus level: 85.1%)

Interpretation and Evidence: Healthcare workers should possess basic knowledge of vaccines and vaccination, consciously improve their understanding, actively receive vaccinations, and actively recommend vaccination. When developing adult vaccination information management modules, chronic disease history collection should be added to enable vaccination providers to recommend appropriate vaccination schedules based on recipients' health conditions [12]. Improving healthcare institution supporting measures, connecting hospital information systems (HIS) with immunization information systems, and streamlining payment and vaccination processes within healthcare institutions will enable HIS and immunization planning information systems to share vaccination history, health status, and contraindications for key populations, facilitating rapid estimation of vaccination coverage and disease incidence rates to provide a platform for immunization effect evaluation and scientific evidence for government decision-making [29].

Recommendation 5: Expand adult vaccination service scope, including extended service hours, mobile vaccination sites, and strengthened personnel training and technical guidance. (Consensus level: 85.1%)

Interpretation and Evidence: Improve vaccination unit service capacity by extending service hours as needed, considering convenience for different populations by opening weekend and holiday adult vaccination clinics to enhance service accessibility. Establish mobile vaccination sites in rural areas through vaccination vans providing regular services to villagers, solving accessibility issues for residents in remote, elderly, border, and impoverished areas. Con-

duct regular training and technical guidance for vaccination personnel through training workshops and online learning platforms, providing up-to-date vaccine knowledge and technical training to improve professional competence and service quality.

Recommendation 6: Promote integrated services for diagnosis, testing, consultation, and vaccination through medical-preventive integration to bridge the "last mile." (Consensus level: 89.4%)

Interpretation and Evidence: Under medical-preventive integration, establish vaccination consultation windows in hospital outpatient departments to provide one-stop services for diagnosis, testing, consultation, and vaccination. General practitioners should provide on-site vaccination services for institutions and special populations, bridging the "last mile" of vaccination services, and establishing green channels and priority vaccination mechanisms for key populations such as older adults and children to reduce waiting times and improve convenience.

Recommendation 7: Promote medical-preventive integration based on the infectious disease prevention and control responsibility list for healthcare institutions. (Consensus level: 91.5%)

Interpretation and Evidence: Leverage performance assessment as a guiding tool by establishing key indicators: process indicators include vaccination coverage and family doctor contract population coverage; outcome indicators include regional disease incidence rates. Strengthen public health and preventive healthcare departments to ensure adequate institutional and personnel capacity to support healthcare institutions in implementing responsibility lists. Implement dynamic adjustment mechanisms to update assessment weights based on epidemiological data, such as strengthening vaccination assessment during influenza seasons.

Recommendation 8: Government-led policy restructuring should revise relevant laws and regulations to clarify fiscal 保障 mechanisms for medical-preventive integration and remove policy barriers to medical insurance payment for preventive medicines such as vaccines. (Consensus level: 89.4%)

Recommendation 9: Remove vaccines from drug proportion assessments in public hospitals and include influenza, pneumococcal, tetanus, and HPV vaccines in the essential drug list, or exclude them from public hospital essential drug proportion assessments. (Consensus level: 86.0%)

Recommendation 10: Strengthen preventive investment to reduce disease burden, ultimately achieving a win-win cycle of medical insurance fund sustainability and enhanced primary healthcare capacity. (Consensus level: 89.4%)

Interpretation and Evidence: Under a closed-loop policy model of "prevention-cost control-development," strengthening preventive medical investment to improve vaccination coverage can effectively reduce incidence of infectious diseases and chronic disease complications, alleviating pressure

on primary healthcare services. Meanwhile, medical insurance global budget prepayment mechanisms improve healthcare institution cash flow and service capacity by advancing insurance funds as "empowerment capital," converting reduced medical demand into fund surpluses [30]; these surplus funds can be used for primary healthcare personnel training and performance incentives, thereby enhancing preventive and clinical capacity at primary healthcare institutions. As capacity improves, disease prevention becomes more robust, medical insurance funds continue to accumulate and flow back to primary care, creating a virtuous cycle among medical-preventive integration, sustainable medical insurance development, and enhanced primary service capacity [31].

Recommendation 11: Leverage medical insurance payment policy as a lever to shift incentives from treating disease to preventing disease, and from lowering fees to lowering incidence—this is an important measure and inherent meaning of promoting adult immunization planning. (Consensus level: 85.1%)

Interpretation and Evidence: Current policy objectives conflict: short-term medical insurance cost control targets (annual budgets) contradict long-term returns on preventive investment (3-5 year effects). During system integration, medical and public health data standards are inconsistent—for example, International Classification of Disease codes are disconnected from infectious disease reporting systems, and hospital information silos are difficult to connect with vaccination systems. Due to separation of prescription authority and assessment authority, the general practitioner system has not truly integrated clinical and preventive functions. Regarding payment mechanism innovation, pilot "capitated global prepayment" or "pay-for-health-outcomes" models should be implemented, exploring multi-party co-payment models for vaccine costs through "medical insurance + fiscal + individual" contributions. Global budget surplases can incentivize medical communities to invest in preventive services, reducing long-term expenditures. Special budgets should be established to avoid short-term cost control behaviors. Through coordination with Diagnosis-Related Group (DRG)/Diagnosis-Intervention Packet (DIP) reforms, vaccination should be incorporated into disease cost accounting to reduce relevant DRG expenditures, and medical insurance settlement systems should be connected with immunization planning information platforms.

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5. Promoting General Practitioner Vaccine Prescriptions

Recommendation 12: Leverage general practitioners' health education role in medical-preventive integration and adult immunization, implement national essential public health services, integrate vaccination into the entire health management process, gradually implement general practitioner preventive vaccination health prescriptions, strengthen healthcare workers' vaccination recommendation responsibilities, and incorporate these into performance assessment and training. (Consensus level: 87.2%)

Interpretation and Evidence: Adhere to the medical-preventive integration strategy, enabling general practitioners to conduct disease prevention and health education during diagnosis and treatment, achieving seamless integration of medical care and prevention to help patients understand vaccines objectively and scientifically, including safety and efficacy, and to recommend vaccination for older and chronically ill patients. In-depth assessment of recipients' health status and contraindications and monitoring of health status builds confidence in vaccination [32]. Promoting increased vaccination coverage and integrating prevention into clinical practice aligns with the Healthy China Action and China's Influenza Vaccination Technical Guidelines, implementing personalized health management and group health education for patients with hypertension, diabetes, pregnancy, children aged 0-6 years, and older adults under national essential public health service projects. Integrate vaccination assessment and services into health check-ups, chronic disease management, and family doctor contract services. Secondary and higher-level general hospitals can establish adult vaccination specialty clinics or co-locate vaccination areas with maternal/child health or physical examination clinics. During influenza seasons, organize centralized vaccination campaigns enabling target populations to complete vaccination in one visit. Promote integrated "general practice + vaccination" clinics, reform information systems, improve residents' health records to promote information exchange, and gradually implement general practitioner preventive vaccination health prescriptions with supporting professional competency evaluations. Train doctors and primary healthcare personnel in adult vaccination guidelines to actively inquire about vaccination history and provide recommendations during outpatient visits, physical examinations, and chronic disease follow-ups. Promote "vaccine prescription" practices enabling general practitioners to include vaccine recommendations in comprehensive health prescriptions; once a "vaccine prescription" is issued, patients can complete vaccination at vaccination clinics or partner pharmacies. Include influenza and pneumococcal vaccination coverage among older adults and chronic disease patients managed by general practitioners in professional competency evaluation and performance assessment standards. Add "medical-preventive integration practice courses" in medical education, such as general practitioner vaccine prescription simulation training. Explore the role of public health physicians in vaccine prescriptions based on pilot public health physician systems.

Recommendation 13: Prepare conditions for vaccine prescription units, expand adult vaccination service delivery models, and fully utilize information technology including artificial intelligence (AI) assistance tools. (Consensus level: 83.0%)

Interpretation and Evidence: Vaccine prescription units should have clearly defined service areas and populations, provide both adult vaccination and disease diagnosis/treatment services, have comprehensive HIS systems, and have good foundations in adult vaccination and clinical practice. Under effective supervision, expand adult vaccination service delivery models to include private clinics, pharmacies, workplaces, community health centers (stations), schools,

etc., to improve convenience and effectively utilize clinical injection rooms. Fully utilize information technology, including AI-assisted prescription tools [33], to leverage the important role of intelligent general practitioners in personalized "vaccine prescriptions" [34].

Recommendation 14: Advance large-scale model and intelligent monitoring and early warning system implementation, conduct identification and monitoring assessment of key populations to provide evidence for vaccinating priority groups. (Consensus level: 87.2%)

Interpretation and Evidence: By connecting to intelligent infectious disease active monitoring and early warning systems [35], identify key populations and develop stratified vaccination strategies. Prioritize influenza, pneumococcal, and HPV vaccination for high-risk groups including older adults, chronic disease patients, healthcare workers, and women of childbearing age. Provide convenient vaccination channels for mobile populations and special occupational groups (e.g., healthcare workers, livestock farmers, military personnel). Implement data-driven risk monitoring and assessment, establish adult vaccination coverage target management systems, and incorporate coverage rates into performance assessments for local governments and health institutions. Develop a unified national adult vaccination information system for real-time monitoring and inter-regional comparative feedback. Integrate routine and emergency preparedness, conducting timely assessments during specific periods (e.g., influenza season) and organizing centralized vaccination campaigns for key populations.

Recommendation 15: Establish incentive mechanisms to increase vaccine prescription fees or subsidies, and further advance tiered vaccine prescriptions in the future. (Consensus level: 85.1%)

Interpretation and Evidence: Establish clear, operational incentive mechanisms to increase subsidies for general practitioners and clinicians issuing vaccine prescriptions. The vaccine prescription model has different implications for primary healthcare units versus general hospitals; in the future, primary healthcare institutions will primarily issue prescriptions for common diseases such as hypertension and diabetes, while general hospitals will focus on clinically complex diseases such as rheumatic immunology conditions.

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6. Developing Adult Immunization Strategic Planning

Recommendation 16: Advance regional, university-locality, and international cooperation; strengthen evidence-based research and vaccine development; clarify vaccine importance and prioritization; and develop priority consensus. (Consensus level: 85.1%)

Interpretation and Evidence: Strengthen cooperation between national and provincial disease control institutions and universities, academic societies, and

research institutes in immunization planning and health promotion research innovation. Conduct joint monitoring of disease burden and vaccine needs among high-risk populations (older adults, chronic disease patients, pregnant women), and carry out evidence-based research on adult vaccination interventions, immunization effect evaluation, and cost-effectiveness analysis [36]. Demonstrate sustainable development models for "vaccine prescription" services, including reducing resident burden through government subsidies, medical insurance payment, and commercial insurance, and reducing costs through optimized resource allocation and improved service efficiency. Clarify vaccine importance and priority order to develop consensus on priorities. Based on international best practices and encouraging innovative implementation, conduct in-depth research and pilot implementation tailored to China' s actual conditions, with scientific evaluation to develop replicable Chinese experience [37]. Establish high-quality data to track immunization progress, advance immunization planning informatization to support scientific decision-making. Conduct international cooperation and exchange in immunization planning, develop research talent and training programs to ensure research and innovation capacity. Further strengthen development and innovation of new vaccines including nucleic acid vaccines, combination vaccines, multivalent vaccines, and therapeutic vaccines to provide technical support for expanding the national immunization program and reducing disease burden from vaccine-preventable diseases [38].

Recommendation 17: Health departments and disease control institutions should lead multi-sectoral collaboration to jointly develop adult immunization strategic planning. (Consensus level: 87.2%)

Interpretation and Evidence: Establish cross-sectoral coordination mechanisms to integrate adult immunization into strategic planning for healthy aging, chronic disease prevention and control, and healthy cities. Scientifically delineate work scopes for health commissions and disease control and prevention administrations while strengthening coordination. The health department should lead coordination with industry and information technology, civil affairs, medical insurance, human resources and social security, finance, education, and private enterprise sectors to determine vaccine immunization planning priorities, coordinate existing and incremental resources, promote inclusion of new vaccines in the national immunization program [38], scientifically plan adult vaccination networks, form policy synergy for adult vaccination, and ensure supply and sustainability. Strengthen monitoring and response to vaccine rumors and misinformation, promptly release authoritative information, improve public vaccine literacy, and ensure vaccine production capacity, transportation capacity, and primary vaccination service capacity.

Recommendation 18: Incorporate adult immunization strategic planning content into the 15th Five-Year Plan and strengthen continuous policy monitoring and evaluation. (Consensus level: 89.4%)

Interpretation and Evidence: As population aging accelerates and chronic disease burden increases, the current child-focused prevention and control sys-

tem can no longer meet the needs of the entire population. Integrating adult immunization strategic planning into the 15th Five-Year Plan represents not only deep implementation of the Healthy China 2030 Strategy but also a necessary response to demographic changes and disease burden reduction. This will ensure policy continuity and address life-cycle health needs.

Expert Panel for the Development of the Expert Consensus on Health Promotion Strategies for Adult Vaccination in China

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