Chinese Expert Consensus on Intelligent General Practitioners (Post-Print)

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Abstract

The rapid development of emerging technologies such as artificial intelligence large language models has ushered in new transformations for medical clinical practice. While research and practical exploration of intelligent general practitioner systems have commenced both domestically and internationally, a consensus has yet to be established. In this context, the Vanke School of Public Health at Tsinghua University, the School of Public Health at Peking University, together with the General Practice Branch of the Chinese Medical Doctor Association and multidisciplinary experts and scholars from multiple domestic institutions in fields including general practice, public health, artificial intelligence, and evidence-based medicine, based on extensive literature retrieval and after multiple rounds of expert deliberations, have formulated the "Chinese Expert Consensus on Intelligent General Practitioners". This consensus comprises 17 expert consensus statements covering the definition, characteristics, applications, challenges, and recommendations of intelligent general practitioners, providing scientific reference for promoting the empowerment of general practitioner clinical practice through intelligent technology and enhancing the level of intelligent primary healthcare services.

Full Text

Preamble

Expert Consensus on Artificial Intelligence General Practitioner (AIGP)

Tsinghua University Vanke School of Public Health, Peking University School of Public Health, Chinese Association of General Practitioners of Chinese Medical Doctor Association

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Abstract: The rapid development of new technologies such as artificial intelligence and large language models has brought transformative changes to clinical medical practice. Research and practical exploration of intelligent general practitioner systems have begun both domestically and internationally, yet a consensus has yet to be formed. Against this backdrop, experts and scholars from Tsinghua University Vanke School of Public Health, Peking University School of Public Health, the Chinese Association of General Practitioners of Chinese Medical Doctor Association, and multiple domestic institutions collaborated to develop this consensus. The expert panel spans multiple disciplines, including general practice, public health, artificial intelligence, and evidence-based medicine. Based on extensive literature review and multiple rounds of expert discussions, the *Chinese Expert Consensus on Artificial Intelligence General Practitioners (AIGP)* was finally formulated. It includes 17 core consensus statements concerning the definition, characteristics, applications, challenges, and recommendations for AIGP. This consensus aims to provide scientific references to promote the empowerment of general practitioners with intelligent technology and enhance the smart service level of primary healthcare.

Keywords: Artificial intelligence; Large language model; General practitioners; Expert consensus

General practitioners serve as the first "gatekeepers" of residents' health and are key implementers of common disease prevention, diagnosis, treatment, and health education. Faced with uneven distribution of medical resources, shortages of primary care physicians, and the severe challenge of chronic disease prevention and management, artificial intelligence technology—particularly large language models (LLMs)—can provide innovative solutions for primary healthcare services in China and become an important force driving transformation in the healthcare field, especially in general practice. With national strategic support and the establishment of biomedical data infrastructure, China is making rapid progress in developing and implementing medical AI technologies, with the prospect of scientifically constructing and widely applying Artificial Intelligence General Practitioners (AIGP) in general practice clinical settings. AIGP can improve the efficiency and quality of medical services, more efficiently provide personalized diagnosis, treatment, and digital health management for patients, and holds creative significance for the modernization of general practice in China.

In this context, to enhance understanding of AI technology applications in general practice, standardize and guide the scientific use of AIGP, and drawing on domestic and international research and clinical practice, the *Chinese Expert Consensus on Artificial Intelligence General Practitioners* was specially formulated. It aims to provide references for healthcare workers and researchers in general practice and related fields, and to promote AI empowerment of general

practitioner clinical practice and its research and optimization.

1. Consensus Development Methods

This consensus was initiated by Tsinghua University Vanke School of Public Health and Peking University School of Public Health, jointly with the Chinese Association of General Practitioners of Chinese Medical Doctor Association. The project started in February 2024, with a 7-month writing period, external review in September 2024, and finalization in October 2024. The consensus has been registered on the International Practice Guideline Registration and Transparency Platform (Registration No.: PREPARE-2024CN344).

1.1 Consensus Users and Target Population

Consensus users are healthcare workers and researchers in general practice and related fields. The target population consists of community residents and patients.

1.2 Consensus Development Group

The consensus development group consists of an expert panel, a writing group, and an academic secretariat. The expert panel comprises 13 members selected based on their extensive theoretical and practical experience in general practice and related disciplines, covering multidisciplinary fields including general practice, artificial intelligence, and guideline methodology. Their primary responsibility is to review, discuss, modify, and refine the overall consensus. The writing group comprises experts with backgrounds in general practice, guideline methodology, and AI research and practice, responsible for drafting and revising the consensus. The academic secretariat is responsible for literature retrieval, coordination, manuscript compilation, and verification.

1.3 Literature Retrieval

Using keywords such as "artificial intelligence," "general practice," "artificial intelligence," "machine learning," "deep learning," "large language model," "supervised learning," "unsupervised learning," "semi-supervised learning," "reinforcement learning," "general practitioner," "family medicine," "family doctor," "family physician," "primary care physician," "primary care doctor," the academic secretariat systematically searched PubMed, Web of Science, Embase, Scopus, CNKI, Wanfang Data Knowledge Service Platform, as well as websites of the Chinese Association of General Practitioners of Chinese Medical Doctor Association, Chinese Medical Association General Practice Branch, and China Community Health Association. The search included guidelines, consensus statements, systematic reviews, meta-analyses, and randomized controlled trial evidence from domestic and international sources, with a search period from database inception to August 31, 2024, without language restrictions. Based on the retrieved

evidence and summarized recommendations, the writing group drafted the initial consensus. The expert panel held multiple meetings to discuss, review, and revise the consensus document, ultimately forming the final version.

1.4 Evidence Quality and Recommendation Strength

The expert panel scored each recommendation individually. For each recommendation, experts used a Likert scale (maximum score 5), where 5 indicated strong agreement, 4 agreement, 3 neutral, 2 disagreement, and 1 strong disagreement. Consensus was defined as the proportion of experts scoring 5 among all voting experts (13). A consensus level exceeding 80% was determined as achieving consensus for that recommendation, with a strong recommendation strength. This consensus condensed 17 recommendations, all of which achieved consensus.

1.5 Conflict of Interest Statement

All experts participating in the consensus development meetings and working group members signed written conflict of interest statements, confirming no relevant conflicts of interest with pharmaceutical companies.

1.6 Consensus Dissemination and Update

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

2. Definition and Characteristics of AIGP

Recommendation 1: AIGP, also known as General Practitioner AI Large Model (GPAI), refers to a technical system or platform that utilizes artificial intelligence technology to simulate the thinking patterns, comprehensive diagnostic and treatment capabilities of general practitioners. Through big data analysis and algorithms, it autonomously acquires professional medical knowledge and performs advanced medical reasoning, providing users with personalized health education, medical consultation, disease prevention, health management, preliminary diagnostic recommendations for common and frequent diseases, and referral suggestions. (Strong recommendation)

Recommendation 2: AIGP typically possesses the following six characteristics: (1) **Comprehensiveness:** Ability to handle multiple diseases and health problems, covering multiple medical fields and the entire life cycle. (2) **Autonomous learning:** Capability to use unlabeled data without specific tasks to complete diverse work. Through self-supervised learning on large, diverse healthcare and medical record datasets, it flexibly combines, reasons, and interprets multi-source, multimodal data including medical texts, health records,

laboratory results, genomics data, and statistical charts to improve diagnostic and treatment accuracy and efficiency. (3) **Interactivity:** Ability to communicate with users, understand symptom descriptions, and provide corresponding consultation services. (4) **Personalization:** Provision of personalized health management and treatment plans based on users' specific conditions. (5) **Convenience:** Users can remotely access AIGP via mobile devices or computers to obtain services. (6) **Assistive nature:** AIGP typically serves as an auxiliary tool for medical professionals and cannot completely replace professional doctors' diagnosis and treatment. (Strong recommendation)

Interpretation and Evidence: AIGP demonstrates strong comprehensiveness, covering the entire life cycle of populations and handling multiple diseases and health problems across disease screening, prediction, assisted diagnosis, and health management in various general practice fields. Simultaneously, AIGP possesses autonomous learning capabilities, continuously improving diagnostic and treatment accuracy and efficiency by learning and analyzing new healthcare and medical record data. During use, AIGP can communicate with users, understand their symptom descriptions, and provide corresponding consultation services. Through big data training, AIGP can learn from large patient datasets to provide personalized health management and treatment plans based on users'specific conditions. For example, the large language model LLaVA-Med, trained on massive biomedical image and text datasets, can process multimodal medical information, analyze medical images such as CT and X-rays, infer patients' potential pathological conditions, and generate relevant Q&A content. Additionally, unlike traditional offline consultations, users can remotely access AIGP via mobile devices or computers to obtain services. However, it should be noted that although AIGP possesses comprehensive consultation and diagnostic capabilities, it currently cannot completely replace professional doctors' diagnosis and treatment. It typically serves as an auxiliary tool for general practitioners, automatically performing routine and repetitive diagnostic tasks to improve efficiency.

In early-stage AI development for general practice, model development largely adopted task-specific approaches. For instance, a chest X-ray interpretation model might be trained on one dataset requiring extensive annotation work. Such a model could only detect pneumonia but could not complete the full diagnostic task of writing comprehensive radiology reports. This narrow, task-specific approach produced models lacking flexibility, capable only of performing tasks predefined by training datasets and their labels. Innovations in new technologies such as multimodal architectures and self-supervised learning have enabled rapid development of large-scale medical AI models. Based on emerging technologies and trained on massive, diverse datasets, AIGP can be applied to many downstream tasks. Unlike traditional task-specific AI large models, AIGP has three key capabilities: First, adapting AIGP to new tasks only requires explaining the new task to the model (dynamic task specification), enabling it to solve previously unseen problems without retraining. Second, AIGP can accept inputs and produce outputs through different data mode combinations

(e.g., examination images, medical texts, laboratory results, or any combination thereof), offering flexible interactivity while providing textual responses and visual results upon request. Finally, AIGP masters medical knowledge, enabling it to reason about previously unseen tasks and explain its outputs using accurate medical language.

3. AIGP in Enhancing General Practitioner Capabilities

Recommendation 3: Assist general practitioners in improving comprehensive capabilities in history-taking, diagnosis, and medication use, increasing diagnostic accuracy, and reducing misdiagnosis and missed diagnosis. AIGP can aid general practitioners in determining referral timing, destination, and pathways for acute, difficult, critical, and severe patients, helping them make efficient, scientific decisions quickly. (Strong recommendation)

Interpretation and Evidence: General practitioner services represent the "last mile" of healthcare delivery. AIGP tailored to general practitioners' needs can break down barriers, eliminate gaps, and comprehensively strengthen professional skills of community-based general practitioners. It helps improve their capabilities in history-taking, diagnosis, and medication use, thereby addressing challenges of staff shortages and insufficient knowledge updates, increasing diagnostic accuracy, reducing misdiagnosis and missed diagnosis, and achieving "AI-assisted diagnosis allowing doctors to focus on patients." This enhances diagnostic and treatment capabilities for chronic diseases, pediatrics, oncology, and other conditions, and assists general practitioners in making efficient, scientific clinical decisions when facing acute, difficult, critical, and severe cases.

Recommendation 4: Help general practitioners meet learning requirements for China' s licensed physician position training. AIGP can provide numerous continuing education courses and practical training tutorials, offering general practitioners opportunities for anytime learning, timely learning, and learning from top experts to meet continuing education needs. AIGP can simulate clinical scenarios, providing practical training and skills for medical staff to enhance clinical diagnosis and treatment capabilities. (Strong recommendation)

Interpretation and Evidence: As a revolutionary educational tool, AI-generated content technology can reshape teaching practices through virtual patient interactions, automated question bank generation, 3D anatomy simulation, and other methods, showing great potential in addressing long-standing problems in medical training such as uneven resource allocation, lagging knowledge updates, and monotonous learning experiences. AIGP provides personalized learning experiences and convenient learning pathways through continuing education and practical training, helping improve general practitioners' capabilities. Through online-offline integration and theory-practice combination, it can enhance doctors' professional quality and clinical skills without geographical restrictions, enabling access to the latest medical knowledge and skills anytime—crucial for improving healthcare quality and efficiency.

Through virtual scenarios and clinical case simulation, AIGP can provide practical training for general practitioners and other medical staff, covering multiple clinical scenarios to enhance their response capabilities and diagnostic skills when facing different diseases. This simulation applies not only to novice physician education but also to continuous training for senior doctors.

4. AIGP in Common Disease Diagnosis, Treatment, and Health Management

Recommendation 5: Assist in the diagnosis and treatment of common and frequent diseases, improving general practitioners' diagnostic capabilities and work efficiency. AIGP can help automatically perform routine and repetitive medical tasks, from medical data input to efficient searching and summarization of medical information, generating comprehensive summaries covering patient history, potential diagnoses, and available treatment options, helping general practitioners save non-clinical working time. (Strong recommendation)

Interpretation and Evidence: AIGP can automate processing of numerous routine and repetitive medical tasks such as medical data entry, medical record management, and medical information retrieval. In diagnosis and decision support, AIGP can integrate patient history, signs, laboratory results, and other data to generate multi-dimensional diagnostic reports. These reports can alert physicians to potential disease possibilities and even provide support from the latest clinical guidelines, enabling faster and more accurate diagnosis and treatment decisions. This not only reduces physicians' time investment in non-clinical tasks but also allows them to focus on more complex diagnostic and treatment work. In chronic disease management, AIGP can not only automatically track and monitor disease progression but also generate dynamic, personalized health management plans based on individual historical data. For example, for common chronic diseases such as diabetes and hypertension, AIGP can combine real-time data and patients' daily records to generate suggestions for adjusting treatment plans, contributing to more precise disease management.

Recommendation 6: Provide full-cycle, precise, personalized chronic disease management for residents. AIGP can continuously update management strategies based on evidence-based information on new progress in "prevention-diagnosis-treatment-rehabilitation"for common community chronic diseases, providing residents with long-term individualized, precise, and integrated digital chronic disease management. (Strong recommendation)

Interpretation and Evidence: Through big data analysis and AI technology, AIGP can identify high-risk populations for community chronic diseases. Through health education and personalized health interventions, the system helps residents establish healthy lifestyles, reducing disease incidence. AIGP uses intelligent algorithms to analyze residents' health data, providing early screening and risk assessment. The system can integrate data from different medical institutions and multiple diagnostic tools, including smart wearable de-

vices and telemedicine, facilitating health monitoring and early screening for residents. By analyzing residents'health data, AIGP can assist doctors in diagnosis, improving diagnostic efficiency and accuracy, ensuring residents' health information is comprehensive and accurate, thereby improving diagnostic timeliness and accuracy. AIGP' s intelligent management system continuously absorbs the latest medical research and clinical data, ensuring management strategies are forward-looking and scientific. This dynamic updating capability makes chronic disease management more flexible and able to respond to emerging health challenges in a timely manner.

Recommendation 7: Provide disease risk prediction, risk warning, and management recommendations for target populations. AIGP can perceive and assess users' disease risk through multi-source long-term data including personal health information, previous diagnosis and treatment information, and follow-up information, issuing warnings to guide timely preventive measures. (Strong recommendation)

Interpretation and Evidence: AIGP utilizes multi-source data and employs machine learning and data analysis techniques to assess users' disease risk. The system can identify potential health problems and provide personalized risk assessments based on users' health history and lifestyle. It generates health intervention recommendations and disease risk predictions. Once high risk is identified, AIGP promptly issues warning information, helping users understand their health status and prompting them to take necessary preventive measures such as regular physical examinations or lifestyle adjustments. Simultaneously, AIGP can provide online health management services and consultation for common diseases.

Recommendation 8: Provide personalized nursing and rehabilitation recommendations for discharged patients based on their medical records and current disease status, helping patients tailor community nursing plans. AIGP can assist general practitioners in disease management and accurate medication administration, providing timely reminders to doctors and patients. It enables remote monitoring of patient health, analyzing physiological parameters, device data, and health records to help doctors manage diseases, reduce readmission and emergency rates, and improve remote care experience through telemedicine advice and nursing guidance. (Strong recommendation)

Interpretation and Evidence: AIGP analyzes discharged patients' medical records and current health status to provide targeted nursing recommendations. These recommendations consider patient history, treatment response, and individual needs, ensuring nursing and rehabilitation plans are effective and feasible. AIGP supports general practitioners in disease management and accurate medication administration. The system timely reminds doctors about drug dosage, timing, and potential drug interactions, helping them make more accurate medical decisions and reminding both doctors and patients promptly. AIGP enables real-time remote monitoring of patient health, collecting and analyzing physiological parameters such as heart rate, blood pressure, and blood glucose, timely

grasping patients' health status, helping medical staff conduct precise and preventive management, providing nursing and rehabilitation guidance, improving remote care experience, reducing readmission and emergency rates, decreasing medical resource consumption, and improving patients' quality of life.

Recommendation 9: AIGP can leverage AI voice and natural language understanding technologies to achieve batch outbound calls, human-computer interaction, and automatic statistical functions, assisting medical and health institutions in completing comprehensive follow-up work including satisfaction surveys, health education, department follow-ups, research follow-ups, and critical value reminders, reducing follow-up costs and improving medical staff work efficiency. (Strong recommendation)

Interpretation and Evidence: AIGP can automatically conduct batch outbound calls to timely contact patients for satisfaction surveys and health education. Through natural language processing technology, it engages in natural conversations with patients, answers their health questions, and completes comprehensive follow-up work including satisfaction surveys, health education, department follow-ups, research follow-ups, and critical value reminders. It automatically collects and statistically analyzes follow-up data, generating analysis reports to help evaluate follow-up effectiveness. This function effectively reduces the statistical burden on medical staff and improves data processing accuracy.

5. AIGP in Health Education and Psychological Counseling

Recommendation 10: Intelligent health education, providing users with scientific knowledge and psychological counseling. AIGP can explain in understandable ways based on users' age, gender, education level, marital and childbearing history, health status, disease history, and family member information, providing personalized health consultation and psychological counseling to meet special needs of the elderly, disabled, and mentally ill. (Strong recommendation)

Interpretation and Evidence: Advances in artificial intelligence and natural language processing have opened a promising path for supporting population-level health education. Chatbots are considered particularly effective tools for expanding capacity because they can provide health information and emotional support. AIGP can comprehensively consider multiple personal factors such as users' age, gender, education level, marital and childbearing history, health status, disease history, and family background to generate tailored health knowledge interpretation and psychological support plans. For special groups including the elderly, disabled, and mentally ill, AIGP can not only provide scientific health knowledge but also help users understand complex medical information through simple language and interactive methods, provide targeted psychological support, emotional support and care, and improve patient engagement and satisfaction.

6. AIGP in Basic Public Health Service Projects

Recommendation 11: In maternal health care service projects, AIGP can assess risk levels for each pregnant woman, apply maternal risk warning models, significantly improving pregnancy management efficiency and quality, including maternal health monitoring, prediction of premature birth and miscarriage risks, gestational diabetes, gestational anemia, and postpartum depression, maximizing the identification and improvement of risks for maternal and neonatal mortality. (Strong recommendation)

Interpretation and Evidence: AIGP can integrate pregnant women' s health data (including medical history, physical examination data, lifestyle habits, etc.) for personalized risk assessment, determine risk levels, and apply risk warning models for prediction, helping doctors develop personalized health management plans for comprehensive management of fetal and maternal health from conception to delivery. Applying maternal risk warning models significantly improves pregnancy management efficiency and quality. AI helps with early pregnancy detection, genetic screening, and continuous monitoring of maternal health parameters, issuing real-time alerts for abnormal results. It also plays a key role in early detection of fetal abnormalities through enhanced ultrasound imaging, aiding informed decision-making. Based on data monitoring of fetal development and maternal health status, it predicts premature birth and miscarriage risks; through continuous monitoring of pregnant women' s blood glucose levels and blood indicators, it predicts gestational diabetes and anemia; using mental health data and emotional feedback, it can identify high-risk groups for postpartum depression early and provide timely psychological support, as well as neonatal pain assessment and sepsis prediction, reducing maternal and neonatal mortality to some extent.

Recommendation 12: In child health care service projects, AIGP can provide intelligent health management for children aged 0-6 years, efficiently and accurately completing child immunization planning, health examinations, diagnosis and management of common diseases, improving the accuracy and timeliness of child health care. (Strong recommendation)

Interpretation and Evidence: AIGP can conduct dynamic monitoring and assessment of children' s growth and development processes, integrate children' s health records (including vaccination records, multimodal physical examination data, etc.), monitor and manage children' s disease conditions, thereby achieving intelligent health management for children aged 0-6. Based on various wearable devices, it can dynamically monitor children' s nutrition, exercise, and sleep health information, grasp their growth and development patterns, and help identify adverse conditions and issue timely warnings. Simultaneously, using deep learning and other technologies, AIGP can achieve rapid and accurate bone age assessment for children through bone age evaluation systems. Research shows that compared with experienced expert diagnosis, optimized AI bone age assessment systems based on convolutional neural networks have higher

overall estimation accuracy and significantly shorter average image processing time. Additionally, by integrating multimodal medical data including physical examinations, laboratory tests, imaging, and vaccination status, it can establish comprehensive health profiles for children, achieving health management for children and effectively improving the accuracy and timeliness of child health care.

Recommendation 13: In establishing community resident health records, elderly health management, tuberculosis patient health management, severe mental disorder patient management, infectious disease and public health emergency reporting and handling services, traditional Chinese medicine health management, health and family planning supervision coordination services, free contraceptive provision, and health literacy promotion actions, AIGP can save labor costs, improve service efficiency, and enhance service quality through intelligent means. (Strong recommendation)

Interpretation and Evidence: AIGP integrates residents' physical examination records, medical visit data, and other information to help establish health profiles for community residents. It can also combine residents' current health status to provide personalized nursing suggestions and tailor nursing plans for them, achieving health management for chronic disease patients, infectious disease patients, and mental disorder patients. In elderly health management, AIGP can significantly reduce adverse events from polypharmacy in the elderly through model building, implementation of specific computerized decision support systems, and mobile applications, making clinical medication use more refined and precise, greatly benefiting elderly patients. Google' s team developed a Personal Health Large Language Model (PH-LLM) based on wearable health monitoring device data, fully leveraging potential in precise behavioral health management and achieving digital management. Digital health technologies (DHTs) can use AI to monitor patients' mental status, blood glucose status, and cardiovascular health, reducing the burden on patients and primary healthcare staff and improving service efficiency.

7. Ethics and Responsibility in AIGP Application

Recommendation 14: The main ethical principles for AIGP application in healthcare aim to guide developers, users, and regulatory agencies in improving and supervising the design and use of such technology. Human dignity and intrinsic value are the core values upon which other ethical principles are based. Ethical principles are important for all stakeholders, including physicians, system developers, health system managers and decision-makers, and national and local governments. AI lacks human legal status; medical personnel and hospitals using AIGP require training, and clear regulations and legal restrictions are needed to appropriately allocate responsibility and protect users. (Strong recommendation)

Interpretation and Evidence: Governments and public sector agencies

should be encouraged and assisted to keep pace with AIGP's rapid development, actively learn from international legislative experience, strengthen top-level design, improve policies and regulations, and build a comprehensive, multi-level ethical governance system. Simultaneously, general practice professionals should receive relevant professional training to appropriately use AIGP to maximize diagnostic and treatment efficiency. For AIGP technical personnel, ethics education should be strengthened to ensure humanistic spirit is fully demonstrated in technology, achieving deep integration of human values and technical logic. From a legal perspective, legal responsibility among patients, general practitioners, and AIGP is very ambiguous, and determining legal liability in cases of patient harm is extremely complex, requiring clear legal and regulatory protection to appropriately allocate responsibility and protect users. Additionally, regarding privacy and regulation, AIGP still has inherent risks of compromising patient privacy, and AI regulatory systems are still being perfected, with stricter regulatory mechanisms yet to be developed.

8. Challenges of AIGP in Primary Healthcare Application

Recommendation 15: AIGP large model training requires high-quality and sufficient data sources, suitable model design and selection, continuous model optimization and validation, and professional clinical understanding. Its data representativeness, data quality, and generalization ability require validation. (Strong recommendation)

Interpretation and Evidence: AIGP model accuracy is a core challenge for medical large language models. AIGP requires large, high-quality training datasets containing hundreds of billions of tokens, with high computational costs. For example, Google' s 540-billion-parameter PaLM model requires approximately 8.4 million hours of tensor processing unit v4 chips for training. Model design requires selection based on the nature of clinical problems and data characteristics; different problems may require different model architectures such as decision trees, neural networks, or support vector machines. For image recognition problems, convolutional neural networks may be appropriate. Trained models require optimization through cross-validation and hyperparameter adjustment to improve performance. Additionally, AIGP requires professional clinical understanding and should integrate general practice professional knowledge, with professionals having general practice backgrounds participating in model design and interpretation to ensure model decisions align with clinical practice.

Recommendation 16: While AIGP can help general practitioners promote equalization of primary healthcare services and optimization of treatment outcomes in medical decision-making, it may easily overlook patients' needs for humanistic care. It is recommended that general practitioners using AIGP maintain a people-centered approach and strengthen humanistic care for patients. (Strong recommendation)

Interpretation and Evidence: Patients' needs for humanistic care represent an important challenge for AIGP. With widespread AIGP application, the pursuit of technical efficiency and decision-making accuracy may lack effective communication skills and empathy, neglecting patients' emotional needs and undermining medical humanistic care. Primary healthcare institutions have long provided comprehensive, continuous, coordinated, accessible, humanistic, and personalized health services to residents, and should always adhere to a people-centered service philosophy compared with other medical institutions. It is recommended that people-centered principles be integrated into general practice AI large model development, incorporating humanistic care elements and considering patients' multidimensional needs, while avoiding over-reliance on AIGP that leads general practitioners to neglect humanistic care for patients.

Recommendation 17: Target populations' acceptance of AIGP varies by age, gender, education level, region, and health literacy. AIGP development requires more user-friendly human-computer interaction methods to better serve the elderly, disabled, and less educated populations. (Strong recommendation)

Interpretation and Evidence: Target populations' acceptance and adaptation to AIGP vary, with the elderly and disabled potentially limited in their understanding and use. Therefore, it is necessary to improve AIGP' s human-computer interaction modes, provide multiple interaction methods such as voice, touch, and gestures, or provide auxiliary functions for special populations to accommodate different needs and preferences, more conveniently serving the elderly, disabled, and less educated. Additionally, it should be ensured that large model intelligent terminals can accurately understand target populations' instructions and execute them smoothly. For target populations in different regions, multilingual support and localized content should be provided to address potential dialects, unclear articulation, and other issues, avoiding ambiguity that could lead to incorrect diagnoses and recommendations.

Expert Panel for the Development of *Chinese Expert Consensus on Artificial Intelligence General Practitioners*

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