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"Internet Plus Health Care" as an Impetus for China's Health System Reform*

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I INTRODUCTION

Digital technologies are integrated into all areas of life. The field of health is no exception. Some of the earliest uses of digital technology for health can be dated back to the 1960s.[1] In its 2005 resolution, the World Health Assembly (WHA) acknowledged the value of digital health and encouraged its member states to incorporate digital technologies into their health systems.[2] The important role of digital health was reiterated in the 2018 resolution, in which the WHA urged member states to prioritize the development and greater use of digital technologies for promoting equitable, affordable, and universal access to health for all.[3] During the COVID-19 pandemic, many countries have accelerated the utilization and development of digital health so as to guarantee the continued provision of health services with minimum in-person contact. As a result, there is now a growing consensus among countries that digital health has the potential to strengthen health systems and improve access to health.[4]

China embraced the new digital technology and attempted to use it for health as early as the 1990s.[5] As will be discussed in the following sections, the government, encouraged by the rapid development of internet technology in China, has made great efforts to support digital health in the past three decades for solving the problem of uneven geographic and health resources distribution. In 2018, the General Office of the State Council released an overarching document, entitled *Opinions on Promoting the Development of "Internet Plus Health Care,"* with an aim to promote

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1 Maryam A. Hyder & Junaid Razzak, Telemedicine in the United States: An Introduction for Students and Residents, 11 J Med Internet Res. e20839 (2020).

2 World Health Assembly Resolution 58.28 (May 25, 2005).

3 World Health Assembly Resolution 71.7 (May 26, 2018).

4 Ilona Kickbusch et al., The Lancet and Financial Times Commission on Governing Health Futures 2030: Growing up in a Digital World, 398 The Lancet 1727, 1727–76 (2021).

5 Hui Cai et al., Application of Telemedicine in Gansu Province of China, 11 PLoS ONE e0158026 (2016).

the innovative integration of digital technologies into the health system as a means of improving equitable, affordable, and universal access to health.[6] The term "internet plus health care" (IPHC) was introduced as a blanket term to mean the use of digital technologies in support of the delivery of health care and health-related services, such as internet-based diagnosis, treatment, and medicine, and internet hospitals. In this article, we use IPHC as an umbrella term for general discussion and refer to specific terms such as internet-based diagnosis where necessary.

This article intends to provide an overview of the development of IPHC in China, from its origins to its widespread use during the COVID-19 pandemic, with focuses on its regulatory landscape and, particularly, on digital diagnosis. In Section III, we identify three major regulatory challenges to IPHC. We conclude with a few recommendations for furthering the development and implementation of IPHC in the post-COVID-19 era.

II LANDSCAPE ANALYSIS OF "INTERNET PLUS HEALTH CARE"

A *The Development of "Internet Plus Health Care" in China*

China's health system has long been criticized for its inequitable distribution of health resources and unequal access to health care. To address these deeply rooted problems, particularly the weak provision of primary health care at grassroots level, the Chinese central government initiated a new round of health reform in 2009. Digital technologies, across a range of measures, have been employed as a feasible modern channel for promoting equitable, affordable, and universal access to health for all.[7]

As far back as the 1990s, some of the first attempts at using digital technologies to improve access to quality health services were initiated. In 1988, the first remote consultation center was founded, which enabled the discussion of neurosurgery cases between Chinese and German hospitals via satellite.[8] With the development of information technology (IT), many medical institutions in urban areas started to establish remote consultation centers for exchanging knowledge and sharing experience with lower-level medical institutions. More importantly, the government made special efforts to support remote diagnosis in rural and mountainous regions as a means of addressing geographic barriers to access health care services. For example, many village clinics were equipped with computer terminals, despite the then poor IT infrastructure in these regions. As a result, a relatively robust physical and IT infrastructure was deployed for IPHC.

[6] General Office of the St. Council, 关于促进"互联网+医疗健康"发展的意见 [*Opinions on Promoting the Development of "Internet Plus Health Care"*] (April 28, 2018) www.gov.cn/zhengce/content/2018-04/28/content_5286645.htm.

[7] Yi Zhang, *Advancing the Right to Health Care in China: Towards Accountability* 162–66 (Intersentia 2019).

[8] Cai, supra note 5, at e0158026.

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Since the beginning of the twenty-first century, a variety of regulatory and policy instruments have been adopted to facilitate the development of IPHC. With supportive policies, giant IT companies such as Alibaba and Tencent began to leverage their advances in digital technologies to establish online platforms and mobile applications to provide health-related services. In the meantime, public medical institutions also started to establish their own internet platforms. In 2012, the first public online hospital platform was founded in Guangdong Province.[9] Provinces with scarce health resources took the initiative to issue favorable policies to attract medical companies to set up internet hospitals as a means of improving access to health for their residents. The favorable policies and innovative technologies have stimulated the rapid development of IPHC during this period. In 2018, the aforementioned *Opinions on Promoting the Development of "Internet Plus Health Care"* (*Opinions*) document was released, with an overall aim to promote IPHC and guarantee equitable, affordable, and universal access to health for all. For quality assurance purposes, platform-based internet hospitals with no offline facilities were no longer allowed. In particular, this document required authorities to develop implementation rules and action plans for governing IPHC. A preliminary regulatory framework was thus established (see details in Section II.B). In September 2018, the National Health Commission (NHC) and the Government of Ningxia Hui Autonomous Region signed a strategic agreement to establish the first national IPHC pilot demonstration area, and in May 2019, the NHC signed similar agreements with another ten provinces and municipalities. In short, tremendous efforts had been made to promote the development and use of IPHC before the COVID-19 pandemic. However, the use of IPHC remained limited in practice due to regulatory restrictions and poor technical maintenance.

The COVID-19 outbreak has become a turning point in this area. The Chinese government has made several regulatory changes to make IPHC more widely used and to ensure the continued provision of health care when in-person services were not available during the health emergency. These changes include the relaxation of limitations on the scope of IPHC services and the expansion of health insurance coverage. The NHC also issued guidelines urging public hospitals to introduce or further develop IPHC as a means of relieving pressure on overloaded offline facilities. As a result, IPHC has obtained greater acceptance and its use surged during the pandemic. Statistical reports show that, by 2021, the number of licensed internet hospitals in China exceeded 1,600, while the user size of IPHC amounted to 298 million, accounting for 28.9 percent of all Internet users.[10]

[9] Dan Wu et al., Description of an Online Hospital Platform, China, 97 Bull World Health Org. 578, 578–79 (2019).

[10] China Internet Network Information Center, *The 49th Statistical Report on China's Internet Development* 57 (2022).

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B *Current Regulatory Framework of "Internet Plus Health Care"*

In 2018, the NHC and National Administration of Traditional Chinese Medicine (NATCM) issued three consecutive normative documents for trial implementation as a response to the requirements of the *Opinions* mentioned above: The *Administrative Measures for Internet-based Diagnosis and Treatment* (AMIDT), *Administrative Measures for Internet Hospital* (AMIH), and *Administrative Regulations on Remote Medical Service* (ARRMS).[11] The AMIDT and ARRMS provide norms and guidelines for the provision of "internet-based diagnosis and treatment" and "remote diagnosis and treatment."[12] These two documents also make it clear that medical institutions and qualified health personnel are eligible to provide such services. According to the AMIH, there are two different operating models of internet hospitals. The AMIH stipulates stringent licensing and operation requirements for each type of internet hospital. It also sets out registration and practicing requirements for physicians who practice at internet hospitals.

In addition, as will be discussed further in Section III.C, the National Health Security Administration (NHSA) issued a series of guidance documents regarding the reimbursement and coverage of internet-based medical services during the pandemic, so as to make IPHC more widely affordable to patients.

Safety is at the heart of health care services, and internet-based diagnoses are no exception. After three years of trial implementation, the NHC published its *Regulatory Rules on Internet-based Diagnosis and Treatment* in March 2022, with an aim to reinforce governance structures and oversight mechanisms for internet-based diagnosis as well as the related medical institutions and health personnel.[13] The new *Regulatory Rules* set out guiding principles for the supervision of internet-based diagnosis and outlined explicit regulatory requirements for medical institutions providing such services. This regulatory document requires provincial health administrations to establish their own regulatory platforms and implement real-time supervision of medical institutions that provide internet-based diagnosis within their jurisdiction, to ensure that internet-based diagnoses meet the same quality as

[11] National Health Commission and National Administration of Traditional Chinese Medicine, 互联网诊疗管理办法（试行）[*Administrative Measures for Internet-based Diagnosis and Treatment (for Trial Implementation)*]; 互联网医院管理办法（试行）[*Administrative Measures for Internet Hospital (for Trial Implementation)*]; 远程医疗服务管理规范（试行）[*Administrative Regulations on Remote Medical Services (for Trial Implementation)*] (July 17, 2018) www.gov.cn/gongbao/content/2019/content_5358684.htm. Normative documents (i.e., "*guifanxing wenjian*") are promulgated by competent national authorities with general legal effects which are generally at the lower end of the hierarchy of Chinese laws. Many Chinese legal scholars regard normative documents as *soft law*.

[12] Given the theme of this book, internet-based treatment will not be further elaborated in this chapter.

[13] National Health Commission and National Administration of Traditional Chinese Medicine, 互联网诊疗监管细则（试行）[*Regulatory Rules on Internet-based Diagnosis and Treatment (for Trial Implementation)*] (February 8, 2022), www.nhc.gov.cn/yzygj/s3594q/202203/fa87807fa6e1411e9afeb82a4211f287.shtml.

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TABLE 11.1 *A selection of legal and policy documents that impact IPHC*

2012	Administrative Measures for Remote Medical Care (for Trial Implementation)
2014	Opinions on Promoting Medical Institutes' Delivery of Remote Medical Services
2015	Guiding Opinions of the State Council on Actively Advancing the "Internet Plus Action"
2016	"Healthy China 2030" Plan
2017	Administrative Regulations on the Application of Electronic Medical Records (for Trial Implementation)
2018	Administrative Measures for Internet-based Diagnosis and Treatment (for Trial Implementation)
	Administrative Measures for Internet Hospital (for Trial Implementation)
	Administrative Measures on the Standards, Security and Services of National Healthcare Big Data (for Trial Implementation)
	Administrative Regulations on Remote Medical Service (for Trial Implementation)
	Opinions on Promoting the Development of "Internet Plus Health Care"
2019	Basic Medical and Health Care and Health Promotion Law
	Guiding Opinions on Improving the "Internet Plus" Medical Service Price and Medical Insurance Coverage Policy
2020	Guiding Opinions on Actively Promoting Medical Insurance Coverage of "Internet Plus" Medical Service
	Guiding Opinions on Promoting "Internet Plus" Medical Insurance Service during the Prevention and Control of COVID-19
	Information Security Technology-Guide for Health Data Security (GB/T 39725-2020)
2022	Law on Physicians
	Regulatory Rules on Internet-based Diagnosis and Treatment (for Trial Implementation)

in-person services. Built on these documents, a preliminary regulatory framework for IPHC has been created. Table 11.1 summarizes the legal and policy documents that have an impact on IPHC.

C *Types of "Internet Plus Health Care" Services*

i Internet-Based Diagnosis

Internet-based diagnosis, or online diagnosis, is a particular type of medical service precisely defined by the AMIDT as "a follow-up diagnosis for some common and chronic diseases delivered by a medical institution's own registered physicians via internet or other digital technologies."

Several restrictions in the AMIDT have been imposed on internet-based diagnosis for quality assurance purposes. First, only medical institutions with valid licenses and registered physicians with more than three years of independent clinical practice are qualified to provide internet-based diagnoses. Second, the scope of diseases

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is limited to certain common and chronic diseases. The types of chronic disease are determined by provincial health commissions and health security administrations, and generally include hypertension, coronary heart disease, diabetes, epilepsy, and so on. Third, a first diagnosis or diagnoses of sophisticated diseases are not permitted. This means that if a person becomes ill and in need of medical services, the person has to have a face-to-face diagnosis first. A physician in an offline hospital should diagnose that the patient has a common or chronic disease, then follow-up diagnoses and treatment can be given online. First diagnoses or patients with no medical records are not eligible for an internet-based diagnosis. Requiring an in-person diagnosis for a first diagnosis is a particular procedural and institutional requirement for safety assurance in the field of digital health.

ii Remote Diagnosis

In the Chinese context, remote diagnosis is a type of medical service provided by two or more medical institutions that are generally in the same medical consortium. According to the ARRMS, one medical institution can invite another to provide technical support for the diagnosis of its patients by means of digital technologies. In practice, normally the inviter is a community-level medical institution that has a close partnership (e.g., medical consortium) with the invitee, which, in most cases, is a top-tier medical institution. The invited medical institution will provide remote diagnosis on the basis of physical examinations and diagnostic tests, such as X-ray, ultrasound, and electrocardiogram, conducted by the inviting institution. For example, a township-level medical center may be equipped with an X-ray unit but lack the expertise to diagnose on the basis of an X-ray film. If a person living in this kind of rural area breaks a leg, they can still visit the center, the physician there will upload the X-ray film to the invited medical institution, and the diagnosis will be conducted remotely. If the center is equipped with a portable X-ray unit, then the patient can be diagnosed at home. Remote medical services promote the intra-group sharing of expertise and ensure that patients living in rural and remote areas have access to the same standards of medical care as those living in urban areas.

iii Online Consultation

Online consultation is the most common type of IPHC provided for first-visit patients with common conditions. Patients can consult physicians or other health professionals at any location about personal medical or psychiatric conditions, or simply seek advice on routine health management, healthy lifestyle, and so on through digital technologies. Online consultation enables patients to receive ongoing care where face-to-face or internet-based diagnoses are not necessary or easily accessible. It is worth pointing out that, while online consultation has much in common with online diagnosis, it lies outside the scope of internet-based diagnosis in the Chinese

context. If an online consultation involves diagnosis-making or drug prescriptions, it is indeed classed as an internet-based diagnosis.

Due to space constraints, other IPHC services, such as online health management, electronic medical records management, appointment scheduling, and online payment are not elaborated here.

III REMAINING CHALLENGES

Despite considerable progress, the widespread implementation of IPHC remains difficult in practice. Regulatory challenges include restrictions on internet-based diagnosis, physicians practicing at multiple medical institutions, and medical insurance coverage and reimbursement. Technology-related barriers include digital literacy and internet infrastructure, among others. Due to space constraints, the following sections focus on the regulatory challenges.

A *Restrictions on Internet-Based Diagnosis*

As internet-based diagnosis is a brand-new model of medical service delivery, the NHC has taken a deliberate approach and limited it to "follow-up" diagnoses for "common diseases" and "chronic diseases" in the interests of patient safety and quality of care. Yet, after years of trial implementation, this restriction has raised considerable controversy.

First, the definition and scope of common and chronic diseases is not clear. The AMIDT stipulates that internet-based diagnosis is restricted to "certain" common and chronic diseases, without specifying which diseases fall within that scope. Even though detailed implementation plans of the AMIDT were formulated by provincial health administrations, the wording remained the same. In real practice, the interpretation of this guidance depends largely on the discretion of physicians due to the lack of legal clarity.

Second, it is difficult to verify whether a common or chronic disease was first diagnosed in an offline hospital. According to the AMIDT and other provincial implementation plans, internet hospitals should request to see medical records directly from patients or from other medical institutions with patients' authorization before diagnosis. Yet, for information security, internet hospitals are less likely to access other institutions' EMR databases, unless there is a preexisting partnership (e.g., a medical consortium). Patients, in particular the elderly, may neither reserve paper medical records nor understand how to upload their records onto the Internet. In practice, physicians collect patient medical records simply to fulfil regulatory requirements. It is not feasible for them to authenticate patients' first in-person diagnoses. During the COVID-19 emergency, the NHC lifted the requirement for first in-person diagnoses. Patients with suspected coronavirus symptoms would have an internet-based diagnosis before going to the hospital. This gives rise

to the question: Is it still necessary to prohibit internet hospitals from providing a first diagnosis, even just for common or chronic diseases?

After many years of IPHC development, there are plenty of discussions in academia and industry about relaxing the restrictions on the scope of internet-based diagnosis. Arguably, internet hospitals have an obvious limitation: Medical services, such as physical examinations and diagnostic tests, must be conducted in-person in offline hospitals. Therefore, because of quality and safety concerns, strict measures have been taken to regulate the operation of internet hospitals. Prior to the COVID-19 pandemic, internet hospitals just served as a supplement to offline hospitals. Yet the demand for IPHC significantly increased during the health emergency. As such, national and provincial health administrations have issued a number of guidance documents to provide temporary regulatory flexibility, so as to make internet hospitals more widely accessible. Internet hospitals have now become a part of mainstream medical service delivery, and the NHC, in its newly released *National Health Informatization Program in the Fourteenth Five-year Plan*, intends to set up electronic health files and electronic medical records for every citizen. These provide a good opportunity to conduct further research on the potential and proper trades-offs between convenience of access to health care and safety of service and privacy, while loosening the regulations on internet-based diagnosis.

B *Physician Multi-site Practicing*

Physician multi-site practicing (PMP) is expected to advance the implementation of IPHC.[14] PMP is designed as a mechanism to address health professional shortages and improve efficient and equitable allocation of medical resources.[15] For example, as Haodaifu ("good doctor" in Mandarin) Online (one of the biggest platform-based internet hospitals in China) claims, there are more than 240,000 physicians registered on its platform, more than 70 percent of whom are from tertiary hospitals across the country.[16] PMP makes it possible for patients living in remote rural areas to receive internet-based diagnoses provided by physicians in big cities, such as Beijing and Shanghai, at home.

[14] Physician multi-site practicing refers to physicians practicing at various medical institutions. Before China's new round of health system reforms in 2009, a physician could only register and practice at one medical institution, which in most cases would be a public medical institution. To this extent, physicians are often regarded as quasi-civil servants. After the reforms, physicians were encouraged to register at one primary medical institution and practice at different institutions as a means to address the shortage of human resources in health care.

[15] Imam M. Xierali, Physician Multisite Practicing: Impact on Access to Care, 31 J. of Am. Bd. of Fam. Med. 260, 260–69 (2018).

[16] China has a three-tiered medical service delivery system with primary health centers providing primary health care, secondary hospitals providing general outpatient and inpatient services, and tertiary comprehensive hospitals providing high-level specialized outpatient and inpatient services. See Zhang, supra note 7, at 80.

PMP needs regulatory clarification. Since the new round of health system reforms in 2009, the Chinese government has issued various guidance documents to encourage physicians to practice at multiple sites. In 2017, the *Administrative Measures for the Registration of Practicing Medical Doctors* took effect and released limitations on the number and geographic location of medical institutions at which a physician is permitted to practice.[17] More importantly, the measures simplified the registration procedures for PMP. Approval from the primary practice institution is no longer necessary. Nevertheless, this requirement was once again included in the 2018 *Administrative Measures for Internet-based Diagnosis and Treatment*. As a result, physicians have to obtain the approval from their primary practice institution before practicing at any internet hospital. Therefore, further clarification is needed regarding the regulation of PMP.

To a lesser extent, even though prior approval would not be necessary for multi-practicing online, it does not mean that the primary practice institution has no de facto discretion when it comes to PMP. In China, most physicians are hired by medical institutions (in most instances their primary practice institution) and are, thus, subject to the personnel management of the institution. Physicians are the most valuable medical resources and the core competence of any medical institution. Arguably, PMP would have a considerable impact on the operation of the primary practice institution. Also, given the high workload in public medical institutions and especially tertiary hospitals, some institutions may take administrative measures to restrict de facto PMP, except for in their affiliated online or offline institutions.

There are also concerns over the affordability and quality of care regarding PMP. On the one hand, prices for medical services provided by public medical institutions, whether online or offline, are capped by governments, while those provided by non-public medical institutions (e.g., platform-based internet hospitals) are self-determined. In addition, as will be discussed further in the next section, medical services provided by non-public medical institutions are generally not covered by the country's mandatory basic medical insurance (BMI) schemes, unless these institutions choose to negotiate prices and sign contracts with local health insurance bureaus (i.e., insurers).[18] Consequently, the service fees charged by non-public medical institutions are higher than public ones and patients have to pay all the service fees out-of-pocket, unless the patient has extra commercial insurance to cover all or parts of the expenses. For instance, for the same specialist, the outpatient service fee charged by the aforementioned Haodaifu Online could be ten times higher than that of the tertiary hospital. On the other hand, physicians are better

[17] National Health and Family Planning Commission, 医师执业注册管理办法 [*Administrative Measures for the Registration of Practicing Medical Doctors*] (February 28, 2017, effective April 1, 2017) www.nhc.gov.cn/cms-search/xxgk/getManuscriptXxgk.htm?id=ad4008212c48418199d2d613087d7977.

[18] "Basic medical insurance" is the mandatory insurance scheme in China which covers over 95 percent of the entire population. See Zhang, supra note 7, at 166.

paid under this circumstance. Financial incentives could motivate them to allocate more (free) time to platform-based internet hospitals, and waiting times for hospital admission would, thus, be significantly reduced. However, there is a dilemma for patients: PMP at platform-based internet hospitals makes medical services provided by specialists more accessible, yet less affordable. In other words, patients need to pay more money in exchange for a shorter waiting time for specialist medical services. PMP may also have a negative impact on the quality of care provided by the specialist's primary practice institution. Therefore, national and provincial health administrations have made some principal guidelines on PMP, requiring physicians to give priority to the work at their primary practice institution. It would thus be important for policy makers to consider complementary measures to encourage as well as to regulate PMP, so as to further improve the accessibility, affordability and quality of health care.

C *Affordability of IPHC*

Affordability is one of the key determinants of IPHC. The NHSA has, therefore, issued a series of policies to make IPHC more affordable to patients. In 2019, the NHSA announced for the first time that all eligible "internet plus" medical services would gradually be covered by medical insurance in the *Guiding Opinions on Improving the "Internet Plus" Medical Service Price and Medical Insurance Coverage Policy*.[19] This document authorizes provincial health insurance bureaus to set prices for internet-based diagnoses and other medical services provided by public medical institutions, while non-public medical institutions are allowed to set their own service prices. Nevertheless, prior to the COVID-19 pandemic, internet-based medical services had not started to be covered by BMI schemes.

In response to the COVID-19 outbreak, the NHSA and NHC issued their *Guiding Opinions on Promoting "Internet Plus" Medical Insurance Service during the Prevention and Control of COVID-19*, expanding the BMI coverage to make internet-based diagnosis and other medical services more affordable.[20] The pricing policy remains unchanged in this guidance document. BMI programs would cover and reimburse internet-based diagnoses for common and chronic diseases provided by designated public medical institutions that voluntarily signed a supplementary contract with local health insurance bureaus. Internet-based diagnoses provided by designated non-public medical institutions would also be reimbursed, but at the

[19] National Health Security Administration, 关于完善"互联网+"医疗服务价格和医保支付政策的指导意 [*Guiding Opinions on Improving the "Internet Plus" Medical Service Price and Medical Insurance Coverage Policy*] (August 30, 2019), www.nhsa.gov.cn/art/2019/8/30/art_14_1705.html.

[20] National Health Security Administration and National Health Commission, 关于推进新冠肺炎疫情防控期间开展"互联网+"医保服务的指导意见 [*Guiding Opinions on Promoting "Internet Plus" Medical Insurance Services during the Prevention and Control of COVID-19*] (March 2, 2020), www.nhsa.gov.cn/art/2020/3/2/art_71_2753.html.

same rate as public medical institutions if non-public institutions choose to provide such services. Multiple provinces and municipalities have also taken actions to temporarily broaden provincial BMI schemes to cover internet-based diagnoses, as well as expand the types of internet hospitals which may provide such services.

Several months later, the NHSA issued another document, *Guiding Opinions on Actively Promoting Medical Insurance Coverage of "Internet Plus" Medical Service*, establishing concrete measures to promote the reimbursement and coverage of internet-based medical services.[21] The new *Guiding Opinions* make clear that a voluntary supplementary contract between designated medical institutions and local health insurance bureaus is a prerequisite for BMI coverage. Payment parity is granted, which means that internet-based diagnoses will be reimbursed at the same rate as the equivalent in-person services provided by public medical institutions offline. However, this document does not require service parity. Provincial health insurance bureaus are authorized to determine the coverage of services in their own insurance plans. Research suggests that twenty-one Chinese provinces have so far expanded their provincial BMI coverage of internet-based diagnoses, while the scope of coverage varies from province to province.[22] In addition, as just explained, non-public medical institutions could set their own pricing for medical services, no matter whether they are provided online or offline. Such services will not be covered nor reimbursed by BMI schemes, unless these institutions choose to negotiate prices and sign contracts with local health insurance bureaus.[23]

To sum up, affordability was, is, and may still be a major barrier for the utilization of IPHC. Although the NHSA has issued a number of polices to expand coverage, most of them only provide principal guidelines, without an integrated regulatory framework for "internet plus" health insurance coverage and reimbursement.

IV CONCLUSION: THE WAY FORWARD

IPHC has proven to be critical and full of potential for strengthening the Chinese health system, transforming health care services, and improving equitable, affordable, and universal access to health. The Chinese government has taken a variety of measures to accelerate the utilization of IPHC before, during, and after COVID-19, such as the establishment and revision of regulations, the removal of restrictions, and adjustments to reimbursement mechanisms. However, gaps remain in the legal and regulatory framework for governing the use of IPHC. Many of the reimbursement

[21] National Health Security Administration, 关于积极推进"互联网+"医疗服务医保支付工作的指导意见 [*Guiding Opinions on Actively Promoting Medical Insurance Coverage of "Internet Plus" Medical Services*] (November 2, 2020), www.nhsa.gov.cn/art/2020/11/2/art_37_3801.html.

[22] Cui Wenbin et al.,"互联网+"医疗服务纳入医保支付范围研究 [*Research on "Internet +" Medical Service Included in Medical Insurance Reimbursement*], 3 中国医院 4–6 (2020).

[23] Xinfa Zhou & Lu Chen, Digital Health Care in China and Access for Older People, 12 Lancet Public Health e873, e873–74 (2021).

mechanisms have been established as exceptions rather than permanent changes. Also, most IPHC-related regulations are still in trial the phases of implementation. Therefore, it is necessary to develop a clear legal and regulatory framework for supporting the development and sustained use of IPHC, and for eventually developing an "internet plus" health ecosystem in the post-COVID-19 era. Additional research on the potential trades-offs in loosening the regulations on internet-based diagnoses, as well as PMP, is needed. In addition, the use of digital technologies for health helps to improve geographic access to health, yet it may exacerbate other inequalities due to digital literacy. For example, the elderly living alone face greater challenges when it comes to using digital technologies to access internet hospitals. Further research should pay particular attention to the special needs of vulnerable groups and focus on how to improve their digital literacy and access to the Internet. Also, additional studies on how to strike the balance between data sharing and privacy protection are much needed.