

Perspective

Development Status of Internet Hospitals in China

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Abstract

Internet hospitals are the deep integration of Internet, information technology and medical services. Driven by new technologies such as mobile Internet, cloud computing, big data, and the Internet of Things, the era of "Internet plus+medical care" is emerging. In December 2015, the first Chinese Internet hospital, Wuzhen Internet Hospital, was launched, and public health emergencies have catalyzed the development of "Internet plus medicine". The emergence of Internet hospitals is a great progress in the process of medical reform, and an important transition from networked hospitals to smart hospitals. How Internet hospitals play their value to share the livelihood problem of "difficult to see a doctor" has become a hot social concern. Based on the common Internet hospitals, this paper analyzes the current development situation of China's Internet hospitals, analyzes the difficulties and challenges they face, and discusses the future development direction.

Keywords: Internet hospitals; Internet plus medical care; Internet plus medicine; Development

Introduction

China's medical resources are characterized by an obvious imbalance in regional distribution. The return visit of patients with common diseases and chronic diseases accounts for the vast majority of medical resources in the outpatient department of the hospital. The Internet hospital can solve the inconvenience caused by the traditional medical treatment process, promote the hierarchical diagnosis and treatment, realize the sinking of high-quality resources, and improve the medical treatment process.

In 2015, the State Council of China issued the Guiding Opinions on Actively Promoting the Action of "Internet plus", taking the development of "Internet medicine" as the key task in the next stage, and encouraging all regions to actively explore the application of Internet medical and health services such as Internet extended medical advice, electronic prescription, and online dispensing [1]. In 2018, the State Council of China issued a series of policy documents, including the Opinions on Promoting the Development of "Internet plus Medical Health" and the Administrative Measures for Internet Hospitals, to encourage the establishment and development of Internet hospitals [2-4]. In the face of public health emergencies, the National Health Commission of China has repeatedly issued documents emphasizing that it is necessary to give full play to the "long-distance, non-contact" advantages of "Internet plus medicine", use multi-channel and multiform publicity and expand online service content, alleviate the pressure of outpatient services, and reduce the risk of cross infection. These positive policies are crucial factors to promote the development of Internet hospitals [5-6].

In recent years, the Internet, the Internet of Things, information technology, big data analysis, artificial intelligence and other information technologies have developed rapidly, and the "Internet plus" technology has become more and more mature in the medical and health field. The application and promotion of smart phones, cloud clinics and interconnected information platforms are all necessary conditions to promote the development of Internet hospitals.

Key Findings and Discussions

Current Development Trend of Internet Hospitals in China

Internet hospitals have broken the barriers of the industry and achieved the cross-border integration of closed-loop and high-quality resources in the whole process of medical services. They have developed to a new stage and realized the real circulation of medical resources. At present, there are mainly two modes of Internet hospital operation in China: "medical institution+Internet technology mode" (entity medical institution self built mode) and "Internet plus+medical service mode" (Internet technology platform mode). It can be seen that the essence of these two modes of Internet hospital operation is the combination of Internet technology (new technology) and traditional medical institutions, that is, the integration and innovation of "Internet plus hospitals". With the continuous development of the Internet medical industry and the successive introduction and adjustment of China's national policies and regulations, the development of Internet hospitals has gone through four stages of development. The first stage: 2000-2009

was the embryonic stage of Internet medicine. The relevant departments introduced few policies, mainly focusing on the medical information content of public medical institutions. Public medical institutions only provided a limited number of online medical information consulting services within the scope of the policy. The second stage: 2010-2015 is the development period of the Internet medical industry, but at this time, the policy pays more attention to the telemedicine code of conduct of public medical institutions, and there is no clear definition of Internet medical enterprises. The third stage: from 2016 to 2017, the Internet medical industry experienced a short cold period. Due to the lack of clear service boundaries, some security risks in the Internet medical industry began to emerge. China strictly limited the scope of Internet medical business through policy tools, which made the Internet medical market players start to slow down or even shrink the market size. Phase IV: After 2018, the Internet medical industry ushered in a turning point. At this stage, the roles, responsibilities and obligations of enterprises and public medical institutions in the process of providing Internet medical services were further refined and standardized. Especially after the COVID-19, Chinese government departments intensively issued supporting documents to support the use of Internet medicine in the fight against the epidemic, and the effective connection between medical insurance and Internet medical services, to open up the online payment interface of medical insurance, and to promote the realization of the "last mile" of medical services [5,6]. In addition, with the establishment of Wuzhen Internet Hospital in 2015, one-stop health butler services such as remote diagnosis and communication, and real-time drug delivery have promoted the transformation of public health from "passive medicine" to "active medicine". The establishment of Wuzhen Internet Hospital and the "regional population health information cloud platform" means that the "Internet plus+medical" health innovation model has moved from concept to practice, showing a good momentum of development. According to the 2021 China Internet Hospital Development Report jointly released by China National Telemedicine and Internet Medical Center and the health sector, as of December 31, 2020, China has built 1004 Internet hospitals, an increase of nearly 500 compared with 2019.

This means that people have adapted to and become accustomed to the convenience and efficiency brought by Internet technology in social activities and daily life. At the same time, the sudden COVID-19 has also accelerated the deep integration of the Internet and medical services, and incorporated Internet medical services into medical insurance reimbursement, so that people can use medical insurance to pay instantly, solve payment problems, and make Internet medical care non-contact, convenient trace-ability and other advantages are fully demonstrated and recognized by the society. According to the consulting data of AISI media, mild chronic diseases have become the main type of diseases treated by Internet hospital users, accounting for 55.4%, and severe chronic diseases accounting for 18.4% [7]. As for the treatment effect, more than 70% of Internet medical patients with chronic diseases are satisfied with the treatment effect of Internet hospitals.

Current Problems and Challenges of Internet Hospitals in China

After years of exploration and practice, China's Internet hospital construction has taken shape, but it still faces many problems and challenges, which need further improvement. First, some of the platform based Internet hospitals established in

the early stage at present carry out diagnosis and treatment for newly diagnosed patients, which is inconsistent with the diagnosis and treatment only for re diagnosed patients mentioned in the national policy. There is non-compliance and a certain medical security risk. This requires the state to introduce a complete legal and regulatory system to regulate Internet hospitals to reduce medical security risks. Second, the category of common diseases and chronic diseases is not clear, so it is necessary to formulate corresponding disease categories and drug catalogues to guide Internet diagnosis and treatment, avoid blind patient seeking, reduce new doctor-patient disputes, and promote the steady development of Internet diagnosis and treatment. The laws and regulations on Internet drug business are also not perfect, how to regulate the professional and technical behavior of pharmacists in Internet hospitals is not mature, the responsibility of third-party platforms and physical pharmacies is not clear, it is difficult to effectively supervise the sales of prescription drugs and drug quality and safety, and other issues are prone to potential drug quality problems and disputes, which is not conducive to the protection of consumer interests and drug safety. The third is the lack of online and offline integrated closed-loop construction. At present, few hospitals can truly implement the online and offline medical service closed-loop, and most of them still stay in the appointment registration, report query and online consulting service functions that do not involve core diagnosis and treatment links. The uneven level of information technology, the lack of information technology talents, the insufficient integration of online and offline services, and the low level of regional coordination also limit its development. Most of the online diagnosis and treatment services provided are limited to a few chronic diseases, and few of them carry out online diagnosis and treatment for common diseases. Online billing and prescription functions are single, with few inspection items, limited drug types, limited medical insurance payment, and insufficient actual function depth, which cannot meet the growing medical needs. In addition, the enterprise led Internet hospitals cannot be located in physical medical institutions because they do not have the qualification of medical institutions. After online consultation, they need to go offline for medical treatment and examination, which makes it difficult to achieve closed loop medical service. Fourth, although Internet diagnosis and treatment has been included in the medical insurance payment, in fact, the "medical, pharmaceutical, and medical insurance" closed-loop is not mature and popular enough. It is also faced with problems such as limited off card payment, diverse types of medical insurance, coverage, reimbursement ratio, off-site settlement, and medical insurance cost control. It is necessary to strengthen the building of medical insurance channels, and medical insurance payment needs to go a long way. Fifthly, in terms of information security, patient privacy and other aspects, in view of the characteristics of Internet medicine, it is necessary to further strengthen information security protection and supervision, improve the security system, determine the security responsibility subject, etc., and strengthen information security and patient medical security. In addition, the level of online doctors' business is uneven, and high-quality doctors in large hospitals have very limited leisure time for online diagnosis and treatment, and their subjective initiative is low. This requires a certain reward and punishment system or incentive means to mobilize the enthusiasm of doctors. The patient's sense of medical experience is not high. The elderly are the majority of patients with chronic diseases. They are not good at operating the Internet and smart phones, and are more suitable for traditional medical models. It is necessary

to develop a platform more suitable for the elderly and expand the customer base [8-10].

Conclusion

The emergence of Internet hospitals is not to compete with physical hospitals, but to provide more services such as hierarchical diagnosis and treatment, remote diagnosis and treatment, health consultation, and follow-up visits, becoming a supplement to physical hospitals. China's Internet hospitals are currently in the initial stage of vigorous development. Although there are still problems in all aspects, they are worth exploring and developing. The development of Internet hospitals has a long way to go.

Author Statements

Disclosure

The authors report no conflicts of interest for this work.

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