The Connotation and Value of Universal Medicine

Xie Yake  Hunan Normal University

Abstract:
Objective: With the continuous breakthroughs in precision medicine, nanomaterials, smart medical equipment and medical robots, human beings are entering a new era of universal medicine. While these technologies are causing medical revolutionary changes, the new technology ecology and the era environment are also impacting and reconstructing the existing medical ethics system. The purpose of this paper is to explore the ethical risks and response paths in the pervasive medical environment.

Method: The research methods are mainly based on ethical research methods, and used cross-disciplinary research methods such as medicine.

Conclusion: From the perspective of ethics, comprehensively and systematically analyze the ethical issues in the era of universal medical treatment, and open up a new perspective, try to establish a new era of medical ethics framework, and expand the research horizon of medical ethics.

keywords:
universal medicine; information ethics; medical ethics; intrinsic value

1 Introduction
With the advent of the universal medical revolution, traditional medical ethics has not adapted to the development of today’s information age. The social ethical problems brought about by universal medical care are more complicated and severe than traditional medical treatment, and their negative effects are more serious. The ethical issues of universal medical treatment have a distinct era value. First, innovations and changes in the medical field are accelerating, new problems and new challenges are emerging, and there is an urgent need to build a new era of medical ethics to guide the ever-changing medical development and medical services. Second, objective, fair and forward-looking analysis and consideration of ethical issues in the era of universal medical care will contribute to the healthy development of universal medical care, help promote the reform of the domestic medical and health system, and help promote medical big data and electronics medical records, electronic health records, and development of precision medical applications. Third, studying the ethical issues of universal medical treatment can promote the harmonious development of medical technology, make technology better serve human beings, and at the same time promote the progress of social ethics, which has important theoretical and practical significance. Fourth, the study of universal medical care can help to get rid of the difficulties of the current medical industry, and propose forward-looking ethical countermeasures and ethical principles to provide better normative standards for the development of universal medical care.

2 Research review
Similar to ubiquitous computing as a future, idealized computing form, universal medical care is also a medical form in which human beings pursue and approach infinitely. It can be said how far ubiquitous computing is from us, and how far is universal medicine from us. The concept of universal medical care has not yet been popularized. In order to more intuitively explore the origin and development of universal medical care, this section began with some similar and related concepts (medical informatization, smart medical, electronic medical records, electronic health records, wearable medical equipment, mobile medical care, open medical records, precision medical care, etc.) to look at the development of universal medical care.

The United States is developing very fast in the field of universal medicine, involving electronic medical records, doctor-patient communication, mobile medicine, and precision medicine. As early as 1996, the US Congress passed the "Medical Insurance Portability and Accountability Act," the HIPAA Act, which was hailed as a model for the protection of electronic medical information privacy in the information
age. Since 2015, the US government has continued to advance the Precision Medicine Initiative (13MI), which includes the creation of a volunteer pool of more than 1 million, the creation of biological samples, the search for cancer genes, and the US FDA (US Food and Drug Administration Bureau), NCI (National Cancer Institute), NIH (National Institute of Health) and other government agencies and medical institutions, scientific research institutions have participated and followed up. The plan advocates medical concepts such as the right treatment, at the right time, give all of US access, and personalized information. Former US President Barack Obama called "appropriate patients, suitable Time, the right treatment." In 2016, the US government launched the construction of a precision medical public database.

Since 2004, the EU has developed a number of “eHealth Action Plan”, actively promoting the implementation of transnational health care and electronic medical record sharing in member countries. In 2014, NHS provided £230 million in funding for upgrading general hospital IT systems. France launched the Oenomic Medicine 2025 program in 2016. With a total investment of 670 million euros, the program aims to build a national genetic sequencing platform and data center to ensure France's leading position in genomics and gene therapy.

In addition to the United States and the European Union, Canada, Japan, South Korea, Australia and other countries are also actively promoting medical information construction and electronic medical record applications. The Canadian federal government invested 500 million Canadian dollars in 2001 to establish Canada's Health Information Company, responsible for the nationwide medical information construction, building an electronic health record system covering the entire territory, greatly enhancing the interactivity and sharing of Canadian health care data. The Japanese government launched the "U-Japan Strategy" in 2004. In 2013, it announced the creation of a state-of-the-art IT declaration, advocating big data openness, circulation and innovative applications, with a focus on public areas such as medical care and transportation. In 2006, South Korea identified the “U-Korea Strategy” and proposed to build an omnipresent and intelligent society to enjoy smart medical services anytime, anywhere. In 2012, the Bundang Hospital affiliated to Seoul National University of Korea built a private cloud covering the entire hospital using a cloud-based virtual desktop architecture (VDI). South Korea launched the post-genome project and the 10,000 Genome Project in 2014 and 2015, with a total investment of more than 550 million US dollars. Australia has launched the Australian Health Information Online Initiative, which aims to integrate medication data and improve medication safety in 1999. With the increasing popularity of electronic health records, in order to further improve the interactive sharing of medical and health data among medical and health professionals, improve medical efficiency and strengthen medical privacy protection, Australia issued the “Personal Electronic Health Archives Act (PCEHRs)” in 2011.

China's smart medical care and big data construction has presented a multi-level step-by-step development pattern, initially forming four types of examples: the application of the first zone, the characteristic application zone, the preliminary application zone, and the development start zone. The first category is smart medical and big data service areas. The development started early, the public medical service system is relatively sound, the regional medical informationization foundation is good, and cloud computing, big data, and mobile Internet have begun to be popularized in terms of medical treatment and health management. Typical cities are Shanghai, Hangzhou, Ningbo, etc. The second category is the application area of smart medical and big data. The development started earlier, the public medical service system is relatively sound, the regional medical informationization foundation is good, and cloud computing, big data, and mobile Internet have begun to be popularized in terms of medical treatment and health management. Typical cities are Guangzhou, Shenzhen, Xiamen, Chengdu, Chongqing, Nanjing, and Harbin. The third category is the preliminary application area of smart medical and big data. The regional and hospital information construction has achieved certain results and established a health information exchange platform. Cloud computing, big data, and mobile Internet are initially applied in terms of medical treatment and health management.
Typical cities are Wuhan, Changchun, Jinan and Fuzhou.
The fourth category is the initial stage of the development
of smart medical and big data, promoting the construction
of medical informatization, proposing the concept and
planning of smart medical development, and exploring the
development model of smart medical care. Typical cities are
Yinchuan, Guiyang, Nanchang, and Shenyang.

3 The connotation and value of universal medical care

3.1 The connotation of universal medicine

Universal Medicine will bring different experiences
and values to all types of subjects in the medical ecosystem.
Discuss the connotation and characteristics of universal
medicine from the perspective of patients and healthy people:

First, medical data is perceptual. Medical data
persuasion refers to a more thorough, comprehensive and
intelligent health perception. All health conditions can
be perceived, digitized, clouded, and form a complete
personal health record and national health big data.
Universal Medical makes full use of Internet of Things
technology and inductive terminal technology, embedded
in thermometer, sphygmomanometer, blood glucose meter,
electrocardiograph, blood detector, etc., real-time dynamic
monitoring of user's body temperature, blood pressure, pulse,
heart rate, blood and other physiological health indicators,
early intervening on health issues. Real-time, comprehensive,
dynamic, and accurate data provides a solid foundation for
follow-up decision making, health management, medical big
data development, and public health surveillance.

Second, medical services are transparent. The transparency
of medical services does not refer to the equality of information
between doctors and patients and the transparency of medical
policies, but refers to the timely or appropriate medical services
that are automatically or semi-automatically obtained based on
contextual awareness. Traditional medicine is a passive diagnosis
and treatment model, and it is difficult for people to get the most
effective prevention and treatment at the most appropriate time.
People are accustomed to getting sick and going to see a doctor.
In the early stages of the disease, they may not be aware of it or
will be allowed to do it. When the disease is aggravated, it is too
late to be treated, and in extreme situations such as severe coma
and sudden fainting, they can only wait to be rescued by others
and often misses the last best time to be treated. In the pervasive
medical environment, the system will promptly make reminders,
warnings and interventions according to the individual's physical
condition and environmental conditions, and in the emergency,
even without personal decision-making, instead of individuals,
make rational choices and win time for the rescue.

Third, the sharing of medical resources. The sharing
of medical resources refers to the high sharing and optimal
allocation of medical resources such as doctors, medical staff,
medical equipment, medical results, and medical information,
breaking the “resource island” pattern of the current medical
system and providing more fair and convenient medical
services. Supported by new technologies such as cloud
computing and big data, Universal Medical will open up
the "information island" that is widely existing in various
hospitals to realize the interconnection, intercommunication and
sharing of medical and health information. Wherever the patient
is, the attending doctor can quickly and easily obtain medical
data such as the patient's medical history and past medical
records by sharing medical information resources, avoiding
repeated examinations, reducing medical examination costs,
and enabling patients to get consistent care services anywhere.

Under the traditional medical system, regardless of major
illness or minor illness, patients go directly to a comprehensive,
professional hospital. Through online consultation platform
to achieve graded diagnosis and treatment, severe and
intractable diseases to comprehensive / professional hospitals
to find specialists; small illnesses, non-emergency illnesses
to community primary hospitals to find community (general)
doctors; sub-health, chronic diseases to health management
Community counseling health/nutrition experts.

Fourth, the diagnosis and treatment of drugs is accurate.
Accuracy of diagnosis and treatment refers to the extensive
use of clinical decision-making systems and health big data
and smarter, safer, more accurate and effective medical
treatment. Rapid diagnosis by reference to personal health
database (gene sequence, disease record, laboratory report,
test report, family history, etc.) and disease database (large
number of medical records, medical report, cure plan, drug
report, etc.), to obtain the best treatment plan by similar genes, age, race and physical conditions to design an effective treatment plan and configure personalized medicine. According to WHO statistics, more than half of all prescribed drugs were improperly distributed (sales), and half of the patients did not use the drugs correctly. According to the statistics of the Chinese Red Cross, about 400,000 people die abnormally in the annual medical damage incident in China. Since 2012, precision medical plans and projects around the world have been one after another, setting off a wave of precision medical research. Perhaps in the near future, we will leave the era asserted by Desmore: medicine is not science, but empiricism based on trial and error.

Fifth, the medical experience is convenient. Convenience in medical treatment refers to a more efficient medical system, a more convenient, accessible, and smooth medical experience, faster access to medical services, and a focus on solving the problem of “difficult to see a doctor”. By integrating medical resources, Universal Medical has established a patient-centered medical service model to standardize and simplify medical treatment. Universal Medicine enables cities, towns, and community hospitals to communicate with each other and fully realize the accessibility of medical care, so that the public can enjoy the diagnosis and treatment services of large hospital experts and doctors in ordinary hospitals or communities, and truly realize zero obstacles across time and space between the doctors and patients, the hospitals and patients and the equipments. There are Therefore, all kinds of “inconveniences” under the current medical system have greatly suppressed a large number of potential medical needs. Many diseases are not obvious in the early stage of the disease, and if they are not treated in time, they may cause serious illness. In the pervasive medical system, the “walls” of traditional hospitals are invisible in the mass media of sensor technology and mobile technology, and the medical and treatments are readily available everywhere.

### 3.2 The value of universal medicine

Universal medical care is not just a medical technology revolution caused by a certain technology, but a comprehensive all-round industry change against the background of the era of universal computing, Internet of Things, big data, cloud computing, genome era, and 3D printing. Universal Medical will become a medical system that will be integrated in the future with more thorough perception and measurement, more comprehensive interoperability and smarter insights.

First, universal medicine is more rapid due to comprehensive perception, movement and automatic acquisition. Based on Internet of Things related technologies, Universal Medical provides deeper perception through multiple channels, accessing all data from sensors, meters and systems, and observing and monitoring the exact situation of each part, individual and every link in the medical system. The emergence of universal medicine has broken the traditional medical thinking. For a long time, medical physical infrastructure and IT infrastructure have been independent: on the one hand, medical buildings; on the other, data centers, computers, networks, and so on. In the era of universal medicine, architecture, medical equipment, and cable will be integrated with chip broadband as a unified infrastructure. In this sense, the medical infrastructure is more like a new construction site, and the operation of the medical system is carried out. In the pervasive medical system, sensors are ubiquitous, and in the ward, in the operating room, in the sick suit, in the medicine, the health of any medical system or process that people care about can be measured and perceived.

Second, universal medical care is more accurate due to the integration of information interconnection. On the one hand, due to the existence of “information islands” and other phenomena, there are information barriers in the medical system. The information of individuals or medical institutions cannot be shared with other parts, so it is difficult to see a doctor. On the other hand, in China, The lack of information sharing has led most patients to visit large hospitals to ensure better treatment outcomes, leading to a serious imbalance in the allocation of medical resources. Through a new way, Universal Medical communicates and interacts, shares information, works collaboratively, bridges information barriers, and works in a seamless and collaborative manner to increase the triple benefits of society, institutions and individuals.

Third, Universal Medicine is smarter because of comprehensive data support decisions. The vast amount
of data generated by medical systems requires intelligent procedures for decision-making, responding quickly and accurately to complex and diverse situations, and continuously optimizing processes and decision-making systems through big data forecasting techniques. The universal medical system provides medical information throughout the society, conducts continuous analysis, optimizes the allocation of medical resources for the entire society, and improves medical efficiency and quality. In addition, Universal Medicine is a system of mutual benefit, which can benefit patients, doctors, medical researchers, hospital administrators, drug suppliers, and medical insurance companies. Technologies such as medical Internet of Things, cloud medical, big data medical, mobile medical, and high-speed mobile networks will continue to integrate, and will jointly build a digital, intelligent medical system that is fully aware, highly shared, and interconnected.

Fourth, universal medicine is also an opportunity and a change for doctors, hospitals and health care companies. As doctors practiced in more and more places, doctors gradually changed from "institutional people" to "free people" and went from offline to online. On the one hand, doctors can use the fragmentation time to obtain corresponding rewards by providing online consultation services; on the other hand, they can also use the Internet to build brands and accumulate word of mouth, which is positive for doctors to actively improve the quality of their consulting services. For hospitals, universal medicine has also created great value. The biggest problem currently plaguing the top three hospitals is the waste of scarce quality medical resources. The online consultation service has played a very good filtering role for such top three hospitals, so that some patients who do not need to go to the top three hospitals to see the outpatient clinics can get professional answers online, so that they do not have to waste the scarce medical treatment of the top three hospitals. Resources, doctors, hospital beds and other scarce medical resources can achieve more optimal configuration. Universal Medical has spawned new business models, including health consulting management, professional medical information platform, medical information, digital precision marketing / data analysis and other service models.

4 Conclusion

Although the construction of universal medical care is still in its infancy, its pace of subverting the traditional medical ecology and reconstructing the medical ethics system is unstoppable. The pace of technology often precedes the construction of an ethical system. In the face of the rapid development of universal medical care, we must reasonably foresee its development trends and moral consequences from a prudent and forward-looking perspective, and give a response from ethics, technology, law and management. Medicine is not pure science, not just digital, equipment, medicine, and guiding principles [6]. It also has ethics, art, society, family, value, and emotion. The role of doctors and the way of practicing medicine will change with scientific progress, but the nature and function of doctors will not be replaced. The computer diagnosis requires the doctor's judgment to affirm and the value of the patient needs to be coordinated by the doctor to reflect, and the positive placebo effect of mental stimulation needs the care of the doctor to enhance, and the distribution of social resources needs the guidance of the doctor to be fair.

References