5G will drive the development of health care

Er-Liang Li[1,2], Wen-Ji Wang[1]

[1]Department of Orthopedics, the First Hospital of Lanzhou University, Lanzhou, Gansu 730000, China;
[2]The First Clinical Medical College, Lanzhou University, Lanzhou, Gansu 730000, China.

To the Editor: With the start of the China-US trade war, the Trump administration signed the Fiscal Year 2019 Defense Authorization Act, restricting the use of 5G in the United States by companies such as Huawei. This is obviously contrary to global integration. 5G network comprehensive performance is up to 100 times than 4G, with ultrahigh data rate, low delay, high mobility, high energy efficiency, and other characteristics.[1] Countries actively apply 5G technology to telemedicine, emergency rescue, and other fields. In September 2019, with the support of China Mobile 5G, a gastrointestinal surgery department of Barcelona, Spain, safely and effectively implemented telesurgery and telecounseling.[2] Additionally, 5G is changing the present and future of medical health in China.

Premier Li Keqiang, State Council of China, noted that "priority should be given to speeding up telemedicine and using 'Internet health care' to make high-quality medical resources more inclusive for the masses,"[3] to improve the level of equalization, universalization, and convenience of the medical industry. On June 6, 2019, China officially issued a 5G commercial license. With the assistance of 5G technology, telemedicine (including cloud data storage and retrieval) is likely to develop at a faster pace; distance is no longer a factor limiting the popularization of high-quality medical resources. China is building a very large 5G medical laboratory network [Table 1].

It is worthwhile to note that the density of mounted antennas must be increased for proper connection performance.[4] As a result, the spread of radiofrequency electromagnetic fields (RF-EMF) is rising, but the health effects of RF-EMF exposure on humans are not clear.[5] Studies have reported that the global 5G wireless network could threaten weather forecasts.[6]

Table 1: Application of 5G in some hospitals in China.

Date	Event	Access
April 11, 2019	The first 5G intelligent medical application demonstration based in Shanghai was implemented in Huashan Hospital, and 5G was used for the live broadcast of a high-definition surgery 20 km away with explanation and guidance of real-time remote surgery.	The first 5G intelligent medical application demonstration base landing in Shanghai. China: Shang Hai government, 2019. Available at: http://www.shanghai.gov.cn/nw2/nw2314/nw2315/nw17239/nw17240/u21aw1379177.html. Accessed October 11, 2019.
May 15, 2019	West China Hospital of Sichuan University successfully conducted the first telemedicine consultation in the province with the First People's Hospital of Chengdu Longquanyi District and Suining Central Hospital, 176 km apart, using 5G technology.	Successful telemedicine consultation using the 5G network in Sichuan. China: The State Council, 2019. Available at: http://www.gov.cn/xinwen/2019-05/15/content_5391738.htm. Accessed October 11, 2019.
June 25, 2019	The First Hospital of Lanzhou University builds a prospective, scientific and open 5G intelligent hospital to explore various application scenarios such as hierarchical diagnosis and treatment, telemedicine, and Internet hospitals.	The First Hospital of Lanzhou University and China Telecom Company signed a contract for the construction of the first 5G smart hospital in Gansu Province. China: The First Hospital of Lanzhou University, 2019. Available at: https://www.lzdxdyyy.com/ArticleDetail.aspx?ArticleID=25542&ClassID=37. Accessed October 11, 2019.
June 27, 2019	Beijing Jishuitan Hospital successfully achieved the world's first simultaneous operation of two patients with a distance of 733 and 1231 km using 5G technology to remotely simultaneously control two Tiangui orthopedic surgical robots.	A leap in time! Beijing Jishuitan Hospital successfully completed the world's first multicenter telesurgery with an orthopedic surgery robot using 5G technology. China: Beijing Jishuitan Hospital, 2019. Available at: https://mp.weixin.qq.com/s/LMmpOKOEh-_lRhvecXgyFQ. Accessed October 11, 2019.

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Correspondence to: Dr. Wen-Ji Wang, Department of Orthopedics, the First Hospital of Lanzhou University, Lanzhou, Gansu 730000, China
E-Mail: ldyygjwwj@163.com

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We believe that 5G technology has greatly shortened the time and space for medical and health services. In the future, wards may no longer be limited to hospitals and quickly introducing only a physician's intelligent devices in real time through information barcodes using 5G networks will be necessary. Specific operations can be performed through remote robots, which greatly reduce the waste and uneven distribution of medical resources.

Conflicts of interest

None.

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