

Knowledge Sharing on Medical Data for medical treatment decisions for Privilege-based Multilevel Organizational Data-sharing medical system

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Abstract:

The hierarchical medical treatment system is regarded as key to solve the problem of insufficient and unbalanced medical resources in many areas. Experts expect that the hierarchical medical treatment system will enable each medical institution to perform its own duty and patients to receive a better service. According to the Precision Medicine Initiative, precision medicine is “an emerging approach for disease treatment and prevention that takes into account individual variability in genes, environment, and lifestyle for each person.” Examples of precision medicine include using targeted therapies to treat specific types of cancer cells, such as HER2-positive breast cancer cells, or using tumor marker testing to help diagnose cancer. Also called personalized medicine. Now we are implementing the Patients Medical Treatment Precision with the help of Hierarchical Medical System.

Keywords: Hierarchical Medical System, Precision Medicine Initiative, Medical Treatment Decisions, Patients

INTRODUCTION

Hierarchical medical system (HMS) is one of the important ways to solve the problem of "seeing a doctor". However, despite proposing "community-based primary care, a two-way referral system, different treatments for acute and chronic diseases and interrelationships at different levels", HMS has actually struggled. At the community level, the Patient Rate has not increased in recent years, from

59.6% in 2013 to 54.2% in 2017. Common diseases and chronic diseases occupy the limited resources of top hospitals. More than 60% of patients in top hospitals can be redirected to lower grade hospitals (Li Yinkoi, 2015). Resource imbalances cause the operation of the Chinese medical system to deviate from the proper state. Causes of the imbalance are the patient's blind faith in the income-based benefits of first-class hospitals and physicians and the quality of

first-class hospitals (Wang Wenjuan, Nan Wenji, 2016). Confined by the system, it is difficult to establish an effective price difference between first-class hospitals and primary hospitals, and an increase in affordability and health consumption weakens patient sensitivity to medical prices.

The application of the Internet and Big Data technology in the medical field is becoming more widespread and thorough, with a profound impact on physicians and patients. Medical information spillovers on the Internet allow patients to gain more diverse medical knowledge, improve their self-diagnosis ability, and thereby stimulate polarization of treatment options, such as self-diagnosis and seek medical treatment at high-level hospitals (Liu Chen, Zhou Jianghang, 2017). The application of Medical Big Data in Clinical Decision Making and the Impact of Medical Treatment Programs on Physicians and Hospitals (Tao C., 2017; Yang City, 2017; Affinianfangs, 2017) greatly improved the effectiveness in the diagnosis and treatment of diseases; Seward JB, 2017). At the same time, the application of technologies such as Smart Medical Treatment and Remote Medical Diagnosis and Treatment will further improve the service efficiency of primary hospitals and increase general patient confidence in appropriate signal transmission primary medical institutions. Therefore, in addition to the internal synergistic factors, the current range of diagnosis and treatment pays special attention to patients who have improved their learning ability and gained more medical knowledge, and changes in the knowledge of hospitals at all levels in the hierarchical medical system and its impact on the entire system.

RELATED WORK:

Medical Information Asymmetry and Game Analysis

Economist Kenneth J. Arrow points out that information inequality between physicians and patients leads to higher risks in medical services, and that such goods or services are called trustworthy goods (Darby and Karni, 1973). Since the main feature of medical credit items is the information disparity between patients and specialists, private information that patients do not have is available to professionals. Therefore, various imperfect information game models have been established in the literature in general to analyze issues such as overcharge and over-treatment from different angles brought about by asymmetric information. For example, search theory conducts a study from the perspective of users searching for relevant treatment information. The signaling game focuses on information that customers expect from the actions of professionals they do not know, and analyzes consumer (social) incentives for proxy model (PA) professionals.

Medical Knowledge Heterogeneity and Spillovers

As patients search for medical information through various channels and platforms, the knowledge gained through communication becomes medical knowledge spillovers (Kennels, 2000). The gist of Knowledge Spillovers is that the social rate of knowledge return is significantly higher than the private return rate (Griliches, 1992). Xu Wen (2012) refers to knowledge spillovers as a result of partial or diffuse medical diagnosis and treatment received by patients and residents from physicians, or as medical and prevention methods of diseases learned and adopted through media and knowledge carriers. At

the same time, the paper studies the relationship between heterogeneous knowledge and cognitive spillovers and divides medical knowledge into common diseases and incurable diseases. It has been found that decision making induced by different knowledge is different

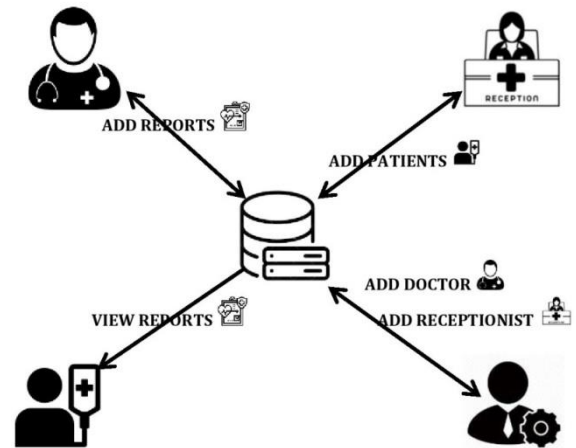
The Characteristics of Medical Services as Credence Goods

Currently, foreign research on trusted goods focuses primarily on medical services and expert consultation. Wolinsky (1993) and Alger and Salani (2006) argue that the market environment is competitive, that consumers can search for the right treatment prices by seeking a diagnosis from a variety of specialists, and effectively reduce the fraudulent behavior of professionals. Furthermore, as long as the cost of searching for information paid by consumers is not too high, expert fraud can be eliminated in balance. Bonroy et al. (2013) included risk-averse clients in the standard expert-consultation trust model, and the results showed that the presence of such clients could weaken specialist treatment enthusiasm and lead to inadequate treatment. Bester and Dom (2014) argue that the best solution to resolving information disparities between patients and specialists is to enter into agreements for diagnosis and treatment with two different agencies.

METHODOLOGY:

In the proposed system we are implementing the Patients Medical Treatment Precision data store into the database. It is easily accessible to patients and can be managed on a server. Also data sharing is allowed for patients and related category physicians. This management is simple and user friendly.

ARCHITECTURE:



CONCLUSION:

Our project finally analyzes the problem in making a decision for medical treatment based on the information disparity between patients and hospitals and whether it can realize the guiding impact on patients' medical treatment decision after improving the level of diagnosis and treatment. Hospitals signal transmission function based on Medical Big Data application to address the confusion of low-level primary care at the community level under HMS.

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