

Research on the Optimization of Medical Service Through Health Service Platform Based on Electronic Health Card

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Abstract: In view of the current problems of patients keeping multiple medical treatment cards and the low level of information sharing among different medical institutions, this article attempts to propose some countermeasures and suggestions from the perspective of building a health service platform based on electronic health cards. Based on patients' electronic health card accounts, patients' ID cards, social security cards, medical institution diagnosis and treatment cards, and biological signs (faces, fingerprints) are effectively integrated to optimize the whole process of health management, diagnosis and treatment services and making payment. The result is that the health service platform based on the electronic health cards can greatly facilitate patients to seek medical treatment with less limitation of getting medical treatment from different regions and institutions, and promote the optimal allocation and sharing of medical resources.

1. Introduction

Resident health cards are based on electronic health records, electronic medical records and a three-level information platform. It is a basic carrier of personal information which can be relied on to achieve cross-system, cross-institution, cross-region interconnection and information sharing. It has functions of identity recognition, medical services, making medical payment, cross-region medical treatment, medical information interconnection, new rural cooperative medical insurance, financial services and etc[1]. In response to the 'Opinions on Promoting the Development of 'Internet + Medical Health' by the General Office of the State Council, the National Health Commission issued the 'Opinions on Accelerating the Popularization and Application of Electronic Health Cards' which clearly stated that fully realizing real-name medical services and health services based on 'One card/code', encouraging the use of electronic health cards as the entrance of Internet + medical health services and 'three-medicine linkage', and promoting the 'multi-card/code integration' of electronic health cards, electronic medical insurance cards, and electronic bank cards are very important. With the current vigorous development of big data, artificial intelligence, 5G and other technologies, the application of information technology in medical industry is becoming more and more mature. At present, residents have a strong demand to enjoy medical resources with one card rather than many various cards. This paper will discuss the current application of resident medical cards and analyse the problems and propose some corresponding countermeasures.

2. The Current Application of Medical Cards in Medical Institutions

- a. Patients need to wait in line many times in the sections of waiting for diagnosis and making payment. A patient usually has multiple medical cards from different medical institutions, and patients' health information between different medical institutions is isolated from each other. Low level of medical information sharing is not conducive to medical treatment;
- b. At present, the standardization level of resident health cards in practical applications is low, and information sharing among medical institutions, health commissions and other government departments, medical insurance and commercial insurance departments, financial institutions, and third-party medical information companies is not so good;
- c. The entire process of medical treatment involves the appointment registration system, payment system, inspection system, electronic medical record system, pharmaceutical management system and other internal systems of medical institutions. In addition, it also involves medical insurance and commercial insurance departments, banks and other financial institutions. Multi-department and multi-system medical business is complicated, and the problems involving policies, technologies and even residents' medical habits can't be settled in one step. Medical workers need to log in multiple systems to complete daily work, and the integration of medical resources in the resident health card account cannot meet the needs of patients;
- d. At present, most residents hold various types of cards with medical functions from different institutions such as medical cards, social security cards, new rural cooperative cards, bank-medicine all-in-one cards , and they are not so likely to apply for resident health cards. In addition, the publicity and popularization of electronic health cards for residents in many regions are not strong enough, so the current use rate of electronic health cards for residents is relatively low;
- e. Medical payment involves medical insurance reimbursement, making payments in different places, new rural cooperative reimbursement, commercial insurance, etc. All these involve many fields such as finance, medical insurance, commercial insurance and third-party payment platforms. Different cards correspond to different systems and we has not yet established a unified platform for centralized payment.

3. Suggestions on the Construction of a Health Service Platform Based on Electronic Health Cards

3.1. Government Takes the Lead in Realizing Unified Planning and Unified Decision Making for Residents' health Cards

A team composed of modern information technicians, smart medical related departments, and maternal and child health experts do some cross-region research covering tertiary hospitals, community and other grassroots hospitals and other medical institutions at all levels. The Health Commission will make overall planning and supervision, and the specific implementation should be conducted by medical institutions, financial institutions, medical insurance departments, commercial insurance departments, and third-party technology platforms to realize the implementation of health service platforms based on residents' health cards.

Internal systems in medical institutions include HIS system, electronic medical record system, inspection system, pharmacy system and outside the hospital are connected with regional health information platforms, health card management systems, medical insurance centers, and disease control centers. In addition,they should collaborate with public security systems (for verification of resident identity information), financial systems, civil affairs department and other departments[10]. Electronic health cards can be promoted by technology and policies.

3.2. Set Uniform Standards to Realize the Perfect Connection between the Platform and Internal Systems of Medical Institutions.

In order to realize the perfect connection between medical institutions and health service platforms based on resident health cards, medical institutions need to optimize important parts including appointment registration system, hospital financial system, pharmacy management system, inspection system, navigation system, electronic medical records system, hospital admission registration management system to support and improve the functions like identification, making payment and cross-institutional sharing of medical and health information of resident health cards.

3.3. Realize Making Payment Through Third-party Platform and Optimize Services for Making Payments

Based on the electronic health card, patients can make payments through third-party mobile payment platforms (supporting Alipay, WeChat, UnionPay, etc.), self-service machines, manual windows and doctors' section. All these can help integrate online and offline payment platforms, simplify the payment process and avoid multiple queues of patients.

Health service platform based on the resident health cards permit patients making payments when all the diagnosis and treatment processes are completed. Patients no longer need to queue for making payments for each section in the process of diagnosis and treatment service and it can save much time.

3.4. Build a Complete Card Issuance System

Patients can apply for resident electronic health cards through manual windows in medical institutions, self-service terminals in outpatient halls, mobile phone online platforms (APP, WeChat official account, WeChat applet, official website, etc.), communities by providing ID cards, transaction passwords and phone numbers. Resident electronic health cards effectively integrate real-name media such as ID cards, social security cards, hospital medical cards, biometrics (faces/fingerprints), and support health management, diagnosis and treatment services and making payments services based on the identification of patient biometrics (faces/fingerprints), card media (ID/social security cards/ (Diagnosis and treatment card).

3.5. Promote Multi-code Integration and Simplify Reimbursement Procedures

The Health Commission cooperate with the medical insurance department, UnionPay and other financial institutions to carry out the integration of 'electronic health code, medical insurance payment code and financial payment QR code'. The health service platform based on the resident health cards can coordinate medical service, medical insurance, commercial insurance and financial settlement and realize multi-channel payments including medical insurance payment, new rural cooperative payment, serious illness payment, commercial insurance payment, etc.

3.6. Construct Health Records based on Residents' Electronic Health Cards

By constructing complete patients health records based on electronic health card, doctors can know well about the patients' medical history information, inspection reports, electronic medical records, medication history and other information in different medical institutions to avoid repeated examinations. Family doctors can set up health management plans based on patients' medical records in different medical institutions.

4. Performance Evaluation

- a. Building a health service platform based on electronic health cards and deeply integrating real-name media such as user ID cards, social security cards, medical institution diagnosis and treatment cards, and biological signs (faces, fingerprints) through residential electronic health card accounts to help patients make health management, make medical payments and other medical services, all these can help to solve the problem of multiple medical cards for one patient and make patients take medical treatment across regions and institutions more convenient.
- b. For patients, the medical treatment process can be significantly simplified. Making payments and enjoying other medical service through the health service platform based on electronic health cards help patients avoid multiple queues for each section of the medical treatment process.
- c. The health service platform based on the resident health cards can realize multi-channel payments including medical insurance payment, new rural cooperative payment, serious illness payment and commercial insurance payment. The platform greatly simplifies the complicated procedures of reimbursement such as getting approval and verification that were originally subordinate to different administrative departments and different departments of the hospital. Patients can handle settlement anytime and anywhere through this platform on mobile phones.
- d. Doctors can check the patients' medical history information, electronic medical records, medical imaging reports, medication history, surgical history and other information through the electronic health card, which can help doctors quickly and comprehensively understand the patients' health information and improve diagnosis efficiency. It can help patients avoid repeated inspections which saves time and economic costs.
- e. Standardizing the industry standards for residential electronic health card accounts has greatly promoted the application of medical and health information standards, and promoted cross-institution and cross-regional medical interconnection and information sharing. The integration of medical resources across regions and institutions greatly helps to solve the problems of health records and payments for people seeking medical treatment in different places and medical institutions, and promotes the sharing of medical resources.

5. Conclusions

This paper points out the current application of resident health cards and analysis the problems in the practical use of health cards, and tries to put forward optimized countermeasures and suggestions based on the construction of an electronic health card-based health service platform. The health service platform based on electronic health cards can greatly facilitate patients to enjoy health management, diagnosis and treatment services, payment services across regions and institutions, avoid patients of multiple queues, simplify reimbursement procedures and greatly optimize the allocation and sharing of medical resources.

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