Research Article

Regional Medical Platform Based on Middleware

Cairen Bai, Jinxin Pan, Xizheng Bao, Yuan Liu, Wenwen Zhang, Lanhua Zhang[*]
Department of Information and Engineering, Taishan Medical University, Taian Shandong, China

*Corresponding Author:
Lanhua Zhang
Email: acm_ict@163.com

Abstract: In order to realize the sharing of medical data and solve the current situation of excessive medical treatment and waste of resources between patients and medical institutions, medical information interface engine is used to set up different levels of middleware interface. According to the international standard of medical information, the data format is defined, and the management, sharing and transmission of medical data are realized by using middleware software technology.
Keywords: Regional medical platform; Middleware; Management information system; Integration.

INTRODUCTION

The biggest feature of this platform is to use middleware software to realize regional medical information sharing[1,2]. Middleware software is platform and operating system, and database software interface software. There have been mature models and cases, using the advantages of middleware to realize the sharing between different types of data, and it also can give full play to the middleware and can easily realize the sharing of regional medical.

METHODS

This system is aimed at city hospital digitalization construction of data cannot be shared, excessive medical treatment and waste of resources situation, study of patients and medical institutions between public information service platform sharing needs and their relationship [3-5], on the analysis of the traditional medical information system based on, the construction of regional medical information integration system, and sharing of medical information management through the design of middleware software [1, 2], also basic health information and community health information can also be information sharing through regional medical platforms, so as to promote the urban regional medical treatment and primary medical treatment informatization construction [4-9].

In order to achieve the requirements, we start from the establishment of regional medical information integration platform, according to the existing medical units within and across a hospital data processing demand analysis[10-13], in view of the problems in the existing medical management information system data can't be shared between the proposed solution, and carried on the theoretical analysis and experimental verification, realizes the standardization of data transmission through the establishment of a middleware platform[1,2], final settlement of regional medical information exchange and sharing can provide comprehensive medical services for patients, reduce medical costs, to achieve information sharing for the medical industry, save costs, while the establishment of a more advanced medical applications, improve the level of public health[14-17].

RESULTS

The basic content of the system includes the following three parts. One is the regional medical information standardization design [6-10]. Through the analysis of medical data format and definition, reference domestic and international of medical industry data definition coding and information exchange standard, the medical data for classification and definition, according to the requirements of data application environment and platform design, combined with the application of existing medical information software in data, in a database on the classification data were unified definition and implementation.

Two is the design and implementation of middleware software [1, 2]. According to the definition of data format, the design of the medical unit content of different systems and different medical units of medical system data sharing middleware implementation method.

Three is the sharing of basic level and community medical information [9, 11-19]. According to the current situation of information construction in primary

and community medical units, the extension interface of middleware is established, and the conversion method of sharing the information of different demand is realized.

DISCUSSION

At home and abroad of the medical and health industry, various medical systems have been widely used, and information platform for the integration and sharing is one of the hotspots in the construction of medical information[6-10]. The difficulty is the standardization of terms, the sharing of information resources and the formulation and implementation of the unified policy.

With the development of medical digital [7, 9-12], information-based and advanced medical equipment and national health care reform, health care policy, especially in recent years of rural cooperative medical care, basic outpatient medical information input, different medical data integration and application become problem facing the medical and health industry. Due to the medical enterprises through the establishment of a suitable for their medical information system for data management and information sharing [4, 16-21], and do not have the ability to build system of rural medical care and outpatient medical information is not effective management and sharing. Therefore, more and more duplication of information storage, information can't be shared, data can't be exchanged, patients need repeated examination and other ills have become a challenge to the construction of medical information.

CONCLUSIONS

Regional grassroots health information integration strategy of public policy service platform is to existing medical information system as the basis[4-10], expand the scope of management of medical information from different levels and levels, to raise the level of information sharing, to the health of the whole people, save money, convenient medical, information sharing is the goal. In the developed countries, the regional medical system has been established according to the information exchange standards. In our country, the construction of regional health information platform is an important part of promoting the reform of health care, and it is also an effective solution to the public service platform.

At present, many countries and cities have started and developed different implementation strategies [11, 15-21], through the card, unified hospital bar code and other ways to establish a regional medical public service platform. Medical region through the platform integration can be achieved within a certain region of the medical information sharing and access, at the same time, through the reserved interface and around them have the ability of unit of basic level medical treatment

through different ways to access the remote or small medical units will be medical information into the platform and Realization of medical information integration strategy, thus promoting the development of universal electronic health systems and health care system.

REFERENCES
1. Sučić, S., & Capuder, T. (2016). Automation of flexible distributed multi-generation systems by utilizing optimized middleware platform. *Applied Energy*, *169*, 542-554.
2. Amaral, L. A., Tiburski, R. T., de Matos, E., & Hessel, F. (2015). Cooperative middleware platform as a service for internet of things applications. In *Proceedings of the 30th Annual ACM Symposium on Applied Computing* (pp. 488-493). ACM.
3. Xi, B., Qin, Q., & Huang, L. (2015). The Business Process Optimization of Regional Health Research Based on Cloud Computing Regional Health Collaborative System Architecture. In *LISS 2013* (pp. 463-468). Springer Berlin Heidelberg.
4. Zhang, L. (2011). Studies of the HMIS Based on HL7 Criterions. *Computer and Information Science*, *4*(1), 224.
5. Nachman, L., Baxi, A., Bhattacharya, S., Darera, V., Deshpande, P., Kodalapura, N., ... & Acharya, R. (2010). Jog falls: a pervasive healthcare platform for diabetes management. In *International Conference on Pervasive Computing* (pp. 94-111). Springer Berlin Heidelberg.
6. Neto, S., & Ferraz, F. (2016). Disease Surveillance Big Data Platform for Large Scale Event Processing.
7. Pearce, J. D., Claypool, S. R., Barski, C. H., & Krieger, F. R. (2009). *U.S. Patent Application No. 12/632,458*.

8. Ma, W., Sartipi, K., & Sharghigoorabi, M. (2015). Security middleware infrastructure for medical imaging system integration. In *2015 17th International Conference on Advanced Communication Technology (ICACT)* (pp. 353-357). IEEE.

9. Derzay, G. J., Heinen, J. M., Hutabarat, C. T. S. K., Kucek, L. M., Suchecki, M. T., & Swierczek, D. A. (2003). *U.S. Patent No. 6,578,002*. Washington, DC: U.S. Patent and Trademark Office.

10. Fraser, H. S., Thomas, D., Tomaylla, J., Garcia, N., Lecca, L., Murray, M., & Becerra, M. C. (2012). Adaptation of a web-based, open source electronic medical record system platform to support a large study of tuberculosis epidemiology. *BMC medical informatics and decision making*, *12*(1), 1.

11. Rac-Albu, E. M., Ciobanu, V., Rac-Albu, M., & Popescu, N. (2016, May). Interoperability of Medical Data Through e-Health Service in Romania. In *International Conference on Exploring Services Science* (pp. 683-692). Springer International Publishing.

12. May, D. D., & Grubbs, L. M. (2002). The extent, nature, and precipitating factors of nurse assault among three groups of registered nurses in a regional medical center. *Journal of emergency nursing*, *28*(1), 11-17.

13. Hsu, A. (2016). Contracts: A Question of Consideration: Medical Staff Bylaws as an Enforceable Contract-Medical Staff of Avera Marshall Regional Medical Center v. Avera Marshall. *Mitchell Hamline L. Rev.*, *42*, 387.

14. Kalli, K., Riziotis, C., Posporis, A., Markos, C., Koutsides, C., Ambran, S., ... & Smith, P. G. (2015). Flat fibre and femtosecond laser technology as a novel photonic integration platform for optofluidic based biosensing devices and lab-on-chip applications: Current results and future perspectives. *Sensors and Actuators B: Chemical*, *209*, 1030-1040.

15. Amorim, R. C., Castro, J. A., da Silva, J. R., & Ribeiro, C. (2015). A comparative study of platforms for research data management: interoperability, metadata capabilities and integration potential. In *New Contributions in Information Systems and Technologies* (pp. 101-111). Springer International Publishing.

16. Meduri, G. U., Kohler, G., Headley, S., Tolley, E., Stentz, F., & Postlethwaite, A. (1995). Inflammatory cytokines in the BAL of patients with ARDS: persistent elevation over time predicts poor outcome. *Chest*, *108*(5), 1303-1314.

17. Sridhara, S. R., DiRenzo, M., Lingam, S., Lee, S. J., Blazquez, R., Maxey, J., ... & Goel, M. (2011). Microwatt embedded processor platform for medical system-on-chip applications. *IEEE Journal of Solid-State Circuits*, *46*(4), 721-730.

18. Xuemei, L., Liangzhong, J., & Jincheng, L. (2008). Home healthcare platform based on wireless sensor networks. In *2008 International Conference on Information Technology and Applications in Biomedicine* (pp. 263-266). IEEE.

19. Nie, B., Jing, S., Ma, H., Han, Z., Zhang, J., & Zhang, L. (2014). Regional Healthcare Platform Integration Study Based on Common Interface. *Journal of Control Science and Engineering*, *2*, 105-113.

20. Asheim, B. T., Boschma, R., & Cooke, P. (2011). Constructing regional advantage: Platform policies based on related variety and differentiated knowledge bases. *Regional studies*, *45*(7), 893-904.

21. Zhang, L., & Xu, X. (2011). A Community Public Health System Design based on HL7 Criterions. *Computer and Information Science*, *4*(2), 148.