Treatment of Complications of Orthopedic Surgery and Consideration of Basic Medical Research Based on Intelligent Science-Guangzhou Medical University and Chifeng College as Examples

Yi Qin[1], Liangyu Li[1], Yixian Lin[1], Guangyuan Li[2]

1. The Second Affiliated Hospital of Chifeng University, Chifeng 024000, Inner Mongolia Autonomous Region, China.

2. Jishou University, School of Medicine, Jishou 416000, China.

Abstract: With the rapid development of modern medical technology, the maturity of orthopaedic technologies, and the improvement of people's quality of life, more and more people choose surgical treatment. The improvement of the overall medical concept requires us to pay equal attention to the psychological education and care of patients while improving the level of diagnosis and treatment. Compared with other surgical operations, orthopedic surgery is characterized by large trauma, more bleeding, long operation time and slow postoperative functional recovery. The psychological burden of patients before and after surgery is heavy, which directly affects the success rate of surgery . Whether the operation can achieve the desired effect depends not only on the success of the operation itself, but also on whether the preparation and nursing before and after the operation are correct and perfect. The research team made specific analysis and report in combination with Guangzhou Medical University and Chifeng University and make a visual medical information management system for research.

Keywords: orthopaedic surgery; basic medical science; research prospect analysis

Introduction to complications

Bone surgery often includes the following types of diseases: first, spinal diseases, such as cervical spondylosis, cervical disc herniation, cervical spinal stenosis, lumbar disc herniation, lumbar spinal stenosis, spondylolisthesis, and other diseases. Second, limb and joint diseases, such as femoral head necrosis, knee osteoarthritis, limb fracture and dislocation, rotator cuff tear, shoulder periarthritis, etc. Third, hand and foot diseases, such as hand trauma, flatfoot, heel pain and other diseases. Fourth, peripheral nerve diseases, such as piriformis syndrome, cubital tunnel syndrome, carpal tunnel syndrome, etc.Medical engineering refers to a comprehensive and high-tech discipline that uses the principles and methods of modern natural science and engineering technology to study the structure, function and interrelationship of the human body at multiple levels from the perspective of engineering, reveals its life phenomena, and provides new technical means for disease prevention, diagnosis, treatment and rehabilitation services. Therefore, the research team innovated and elaborated this model.
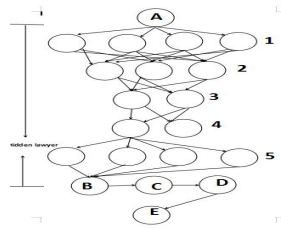
Figure 1

A: The patient's immediate post-operative care starts. Cloud data transmits digital signals to the input terminals and signals to the neural network after opening the authority of the hospital information department through API. The hidden working layer is activated through the activation function.

1: Calculation layer 2 of patient's postoperative nursing days: transfer calculation layer of patient's current laboratory examination results

3: Current grouped clinical drug use record calculation layer 4: Chinese traditional medicine drug selection layer

5: Calculation layer B of big data management principle for each drug: output end, responsible doctor obtains corresponding drug recommendation form

C: Disease communication, entering the hospital management system, and incorporating suitable drugs D: 5-10 days of clinical treatment records

E: The medical department reviews relevant data and submits treatment records to the cloud database

Design concept: Chinese traditional medicine has been widely used in the rehabilitation and treatment of postoperative patients in China. In our experience in the management of postoperative patients in spinal surgery in Beijing Shijitan Hospital affiliated to Capital Medical University, we clearly found the role of Chinese traditional medicine in the rehabilitation process. Based on the guiding treatment philosophy of Chinese traditional medicine, we believe that this technology is not suitable for global promotion, Therefore, we believe that the data association principle layer calculation of design health statistics and its connection with global big data will play an important role in our experience in using traditional Chinese medicine for spine surgery. It is undeniable that the patient's data association with the corresponding antibiotics such as ceftriaxone sodium, levofloxacin, gentamicin and other commonly used antibiotics and the necessary proton pump inhibitors and hydrogen ion receptor antagonists after surgery in the process of postoperative infection prevention is also quite persuasive in the doctor-patient communication, transforming abstract philosophy of Chinese medicine into objective and visual medical data, serving patients, It is also conducive to the promotion of experience.
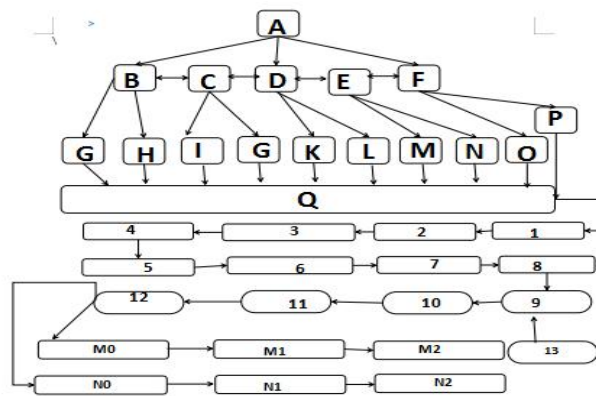

Figure 2

A: All vital signs and postoperative medical related information of patients are broadcast via network data.

B: Nursing workstation C: Nursing department D: Doctor workstation E: Medical department F: Computer management center.

G: Nursing operation recording equipment H: nursing consumables use recording equipment.

1: Nursing management recording equipment G: nursing record review equipment.

K: Doctor work record layer L: doctor work medical consumables use statistics layer.

M: Working medical record inspection equipment N: overall department inspection result recording equipment O: working equipment inspection recording equipment.

P: Working equipment running time record.

Q: In hospital storage and recording equipment 1: Chinese medicine use information extraction layer 2: nursing information extraction layer.

3: Clinical operation information extraction layer 4: hospital data analysis department conducts quality assessment and data screening.

5: Agree or disagree to connect to the cloud database to upload relevant information 6: 5G based network access.

7: Cloud database inclusion procedure 8: Cloud database extraction procedure.

9: Network channel under 5G network based on terminal of extracted network 13:5G network network slicing function.

10: Hospital data processing center 11: doctors get the big data they need to extract.

12: Data acquisition at medical device input.

MO, N0 and subsequent procedure steps are the relationship diagram between the medical workstation of the internal department of the hospital and the nursing workstation of the internal department of the hospital.

M0: doctor workstation M1 doctor operation treatment management system M2: treatment equipment for information collection.

N0: nursing workstation N1: nursing console management system N2: nursing equipment for information collection.

Design concept: We have designed a big data system with real-time updates on the cloud data side, which is conducive to improving the overall optimization of postoperative nursing effect and drug selection.

Basic medical thinking

In terms of clinical research in orthopaedic surgery, it is also necessary to further study basic medicine, which is the basis of medicine. Basic medical education not only undertakes the training task of students of basic medicine related majors, but also undertakes the training of clinical medical students at the basic stage, participates in the teaching of preventive medicine, health management, pharmacy, nursing and other medical specialties, and helps medical students understand and master the basic theoretical knowledge and experimental skills of medical science, It will lay a solid foundation for their future medical professional study and practice. Basic medicine is an important force to promote medical science and technology innovation and improve human health. In the long river of human history, the innovation of basic medical theories and technical methods has influenced and driven the development and progress of the whole medicine.

Conclusion

Psychological intervention before orthopedic surgery can make patients have healthy psychology and correct understanding, and achieve the best physical and mental state; Cooperate with doctors and nurses to jointly improve the treatment effect and the success of the operation, so as to achieve twice the result with half the effort. We need to develop basic medicine to overcome necessary clinical problems in the future. Taking Guangzhou Medical University and Chifeng University as examples, it is very important to carry out cooperation between universities. More cooperation is needed to promote the development of medical research in the future.

Reference

[1] Jackson Christopher M., Weingart Jon D., Brem Henry, et al. 151 - Basic Principles of Cranial Surgery for Brain Tumors. 2023, :1049-1049.e9.

[2] Basiaga Marcin, Walke Witold, Taratuta Anna, et al. Electrochemical Behavior of SnO2 Layer Deposited on Biomaterials Used in Bone Surgery. 2022:39-58.

[3] Biagini Roberto, Scotto di Uccio Alessandra, Attala Dario, et al. Future Developments of 3D Printing in Bone Surgery. 2022:165-174.

[4] Alibrahim Hidar, Wahedi Mohamed, Almohammed Mohammed Rajab, et al. Fracture of the humeral surgical neck and shoulder dislocation following an epileptic seizure: Case report[J]. Annals of Medicine and Surgery, 2022, 74:103323-103323.

[5] Cutolo Maria Alessandra, Cafiero Carlo, Califano Luigi, et al. Feasibility analysis of an ultrasound on line diagnostic approach for oral and bone surgery[J]. Scientific Reports, 2022, 12(1):905-905.

Corresponding author: Luo Qinglu (1973 -), male, doctor, professor, engaged in modern rehabilitation research of bone and joint diseases.