

# The Value of Modern Information Technology in Nursing Emergencies

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## Abstract

In first aid, traditional information interchange has numerous shortcomings. For example, delayed information and disorganized departmental communication cause patients to miss out on critical rescue time. Information technology is becoming more and more mature, and as a result, its use across numerous industries is now standard. China is still in the early stages of developing its integration of emergency medical services with modern information technology; despite our progress, there are still numerous obstacles and constraints to overcome. Our goal is to integrate information technology into every aspect of emergency patient care, offering robust assistance for both patient rescue and the efforts of medical personnel. Information may be communicated in a fast, multiple, and effective manner by utilizing modern information technology. This study aims to examine the current state of this field's development, current issues, and the field's future course of development.

## Keywords

Modern Information Technology, Nursing First Aid, Critical Care

## 1. Introduction

Critical care is an important measure to save patients' lives, and it is also an important part of the first aid system. However, the traditional first aid measures are simple, insufficient ability to save patients, and inefficient. At this stage, with the popularization and application of modern information technology in various

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industries, there is a space for the development of modern information technology with more rapidity, low latency and accuracy. We are based on the new medical science background [1], the use of modern information technology and medical emergency combined, give full play to the advantages of modern information technology, to achieve efficient, accurate, and timely rescue of patients.

## **2. Integration of Modern Information Technology in Pre-Hospital and Intra-Hospital Emergency Care**

### **2.1. Precise Positioning, Fast Arrival**

When the patient calls the 120 emergency center, modern information technology first aid integration platform, according to the patient's cell phone signal or given orientation information, using GPS or Beidou and Bluetooth composite high-precision positioning system [2]. Through the patient's cell phone positioning or nearby landmarks to accurately locate the patient's position; at the same time, through satellite data analysis, to select the fastest, safest ambulance departure route. To arrive at the location of the patient in the shortest possible time, and provide timely and effective pre-hospital treatment to the patient within the golden rescue time. When going to the hospital, the same use of GPS or Beidou satellite positioning system to screen out the best route back to the hospital and realize one-key navigation, and at the same time to strengthen the communication with the traffic police, combined with information technology to the nearby vehicles to push out the ambulance information, timely avoidance, escort for the ambulance!

### **2.2. Integration of Information and Optimization of Solutions**

Ambulances have a limited and incomplete range of first aid resources and can only perform routine examinations and treatments. As a result, a comprehensive rescue program cannot be implemented when providing first aid to patients. Based on this, modern information technology can be used to integrate patient data, screening and integrating information such as the patient's age, gender, basic information, past medical history, the presence of surgical treatments, and the use of special medications, and sending it to the physicians and nurses following the ambulance to accurately judge the patient's condition based on the above information, and to implement the most effective routine checkups and differentiated pre-hospital first aid. After getting in the ambulance, firstly, it implements first aid and observation on all aspects of the patient, real-time ECG information of the patient to ensure that the patient's life condition is good; secondly, it will supply oxygen meter, blood routine, and other data to see whether there is a critical value, realizing that the ambulance becomes a "mobile hospital" [3]. Provide patients with the best treatment measures to improve the efficiency of treatment; finally, based on the information integrated by modern information technology, the physician following the car should be based on field observation, the patient's real-time sign information, disease conditions, wound details and other informa-

tion integrated and fed back to the hospital information acceptance terminals, the hospital's attending physician will be the integration of the two aspects of the information analyzed remotely to guide the physician or nurse to carry out a more accurate first aid, and at the same time, to develop an exclusive treatment plan for the patient when the patient arrives at the hospital to receive in-hospital treatment at the first time. At the same time, it will formulate an exclusive treatment plan for the patient, and wait until the patient arrives at the hospital to receive in-hospital treatment for the first time.

### **2.3. Green Channel, Emergency Assistance**

When the patient arrives at the hospital, a green channel will be opened for the patient inside and outside the hospital, and the critically ill patient will be sent to the operating table for resuscitation for the first time. Doctors of each department should arrive at the door of the surgery in advance because the basic signs and conditions of the patient's information have been fed back to the hospital information terminal through the information technology center, and each department completes the consultation in advance and carries out a comprehensive physical examination to ensure that there is no error in the diagnosis and urgent and intense treatment after the patient's arrival. Based on the analysis of the patient's information in advance, the Laboratory and Imaging Departments will formulate the items to be tested on the patient's blood samples, whether the patient has infectious diseases, and whether CT or ultrasound will be carried out on different parts of the body, so as to assist the treating doctors in the emergency treatment of the patient. For patients with mild symptoms, the emergency department of the hospital will give them first aid, and then the nurses of the corresponding departments will bring them to the departments for precise treatment according to the parts of the disease and the type of disease, so as to realize the right medicine for the right patient.

### **2.4. Self-Help and Mutual Aid to Buy Time**

Nowadays, there is a lack of public awareness of self-rescue and mutual rescue, and there is also a long window of opportunity for the whole society to have insufficient first aid capability. In view of the shortcomings of poor self-rescue consciousness and insufficient self-rescue techniques, health care personnel should use modern information technology to receive patients' requests for help, such as interactive video calls, to calm patients' nervousness, and to guide patients in less serious conditions to self-rescue; for patients in serious conditions who cannot be rescued by themselves, health care personnel should contact patients' nearby community health centers through information technology to provide first aid to ensure that patients' life and body signs are not changed. Physical signs. In addition, to strengthen the ability of lay people emergency rescue training, in the community, schools, factories and other densely populated places, regularly held first aid safety drills, through hands-on training to improve the first aid ability of non-

professionals and awareness of first aid; usually through the radio, video broadcasting and other methods to vigorously publicize the emergency rescue methods, such as artificial respiration, Heim style first aid, finger pressure arterial hemostasis and so on [4] [5]. This method can not only improve the public's awareness of self-rescue and mutual aid, extend the time for patients' emergency treatment, and increase the chances of patient's survival, but also enhance the social emergency treatment capability, shorten the gap between the emergency treatment time and that of developed countries, and safeguard the life and health of citizens.

### **3. Innovative First Aid Measures Based on Information Technology**

#### **3.1. Establishing a Gridded Strategy for First Aid**

##### **3.1.1. Establishment of a Joint Emergency Care Grid Strategy Based on Province-City-County-Town Hospitals at Four Levels**

The four-level hospital joint emergency care grid strategy, led by provincial hospitals, leads the other three levels of hospitals to carry out joint emergency care. When encountering a major disease, the lower three levels do not have enough medical capacity to treat the patient, it is necessary to use modern information technology to present the patient information to the provincial hospital information terminal, the provincial hospital unified deployment, the opening of a green channel, the patient will be quickly transferred to the hospital. When the pressure on provincial hospitals is large, through modern information technology to analyze and screen out the lower hospitals with the ability to save the patient, you can send part of the patient to the lower hospitals to save the patient, not only to reduce the pressure on provincial hospitals but also to improve the ability of the lower hospitals to save the patient.

##### **3.1.2. Creating a Basic Medical Emergency Network by Combining Rural Health Centers with County and Town Emergency Basic Medical Care Points**

When receiving the signal of first aid for patients with minor illnesses or in remote areas, the deployment center contacts the nearest basic first aid station through information technology and arrives at the patient's side for the first time for simple first aid. In addition, the doctor asks the family members and witnesses about the basic information of the patient combined with the scene and reports all the information to the information terminal of the higher-level hospital, and the higher-level hospital carries out on-site emergency treatment or hospitalization for the patient according to all the information with all the instruments and equipment, diagnostic and treatment tools, and syringes and medicines. This method can not only shorten the emergency radius and emergency time to ensure the safety of patients, but also reduce the cost of hospitalization of patients with minor illnesses across towns and counties, and improve the efficiency and speed of emergency treatment.

## **3.2. Improve the Informaionization of Rescue Equipment**

### **3.2.1. Improve the Informatization of All Medical Equipments Centering on Basic First Aid Stations**

As we all know, the medical equipments at the town level is far inferior to those of higher-level hospitals, and the limitations of instruments and equipments in carrying out emergency treatment often fail to realize effective treatment. Improving the types of emergency equipment and computerization can realize the treatment of minor diseases nearby and reduce the medical pressure of higher hospitals; at the same time, the information detected after the computerization of the equipment is synchronized to the higher hospitals, which can remotely guide the medical treatment [6], improving the diagnosis and treatment level of the basic hospitals and emergency medical treatment capacity.

### **3.2.2. Establishment of the “120, 110, 119, 122” Four-in-One Information and Emergency Service Center**

Car accidents on highways often involve multiple parties, ambulance, public security, fire, and transportation. The establishment of the four-in-one emergency service center, a party to receive the police, multi-party support, unified deployment by the receiving police, and joint rescue, to achieve multi-party, rapid, and efficient rescue. In first aid to the patient at the same time to ensure smooth traffic, clean up the scene of debris, ensure the safety of others driving; eliminate the source of ignition, to prevent explosions caused by secondary injuries; set up a warning sign, to prevent the scene of the emergency rescue was interfered with, endangering the safety of the patient and ambulance personnel.

## **3.3. Cultivation of Highly Skilled Personnel through Modern Information Technology**

The professional competence of medical and nursing personnel is particularly important in providing first aid to patients, whether in provincial hospitals or basic first aid stations. When providing first aid to patients with insufficient professional ability, healthcare personnel often fail to grasp the focus of the patient's condition, make the best judgment of the patient's condition and are unable to implement accurate and efficient first aid. No matter how advanced the instruments and equipment are, the medical personnel do not know how to operate them, and they cannot transmit the patient's disease information to the hospital information terminal. Therefore, through the network audio-visual classes, academic lectures, and Chinese digital human [7], VR simulation exercise technology improves the first aid skills of healthcare professionals. When facing different patients and different situations, it is a responsible performance for both the patients and themselves to be able to solve problems without panic and ease. In hospitals, first aid competitions are held regularly to improve the first aid level of medical personnel and maintain the stability of the first aid team. Therefore, the development of a medical team with excellent professional ability, strong enough psychological quality, and specialized instrument operation through information techno-

logy is essential to improve the efficiency and success rate of first aid [8].

## **4. Potential Risks and Preventive Measures of Modern Information Technology in First Aid**

### **4.1. Potential Risk**

Although modern information technology plays an important role in the first aid of patients, the effect is remarkable. But there are still some potential risks. For example: when dialing 120, the communication signal is poor, the cell phone signal is interfered with, unable to accurately locate the patient's position, especially in the complex terrain, prolonging the time for the patient to be first aid; the network signal is easy to be interfered with, unable to carry out the communication link, failing the video guide to rescue, the patient's self or the medical staff rescue is interrupted; the navigation system is down when there is a large flow of people, many vehicles, and the traffic is not smooth. The best route cannot be selected. The longer the patient is delayed on the road, the more likely the condition will deteriorate, and it is likely to miss the best rescue time; instrumentation, medical tools failure or health care personnel are not familiar with medical equipment, in the operation of the instrument is a mistake. Can not timely integrate the patient's disease information feedback to the hospital information terminal, the various departments of the doctor cannot make a diagnosis of the disease in advance; at the scene of the accident, the awareness of mutual aid is insufficient, the public is unwilling or afraid to save people. All of the above potential risks may occur at any time, anywhere, for the patient's first aid is undoubtedly fatal!

### **4.2. Protective Measure**

Regular maintenance of emergency medical equipment, to ensure that the instrument is at a critical time without accident and the accuracy of the data, which is essential to the patient's early consultation; first aid knowledge lectures, and skills competitions to strengthen the professional ability of first aid personnel and psychological quality training, in the event of a calm, calm, calm handling; joint public security, transportation and other departments, the opening of the emergency rescue channels for the patient's rescue to fight for more time, and at the same time, hope that the police can give help to find patients when the signal is lost; vigorously promote self-rescue and mutual aid awareness of others in need of help. We hope that the police can help us to find the patients when their signals are lost; vigorously publicize the awareness of self-rescue and mutual aid, and lend a hand to others when they need help.

## **5. Summary**

According to current information technology, medical emergencies in our nation are still in the early stages. This is partly because there aren't many hospitals, clinics, or treatment facilities using this technology, which contributes to the lengthening of the patient's emergency stay. The implementation of the emergency grid

construction and the four-in-one first aid policy has several problems, including the absence of several departments of communication and an imperfect command system. But as more people become aware of how quickly current information technology is developing, the patient rescue rate will rise as the medical emergency system built on this technology gradually gets better. It offers China's first aid policy a fresh point of reference and eventually achieves quick, effective, and information-based first aid services.

### Conflicts of Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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