

MEDICAL APPLICATION OF LOGISTICS INFORMATION TECHNOLOGY IN THE NEW CROWN EPIDEMIC

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Abstract: The Newcastle epidemic is raging within and outside of China. It has become a public health event of great concern worldwide. This paper focuses on the current situation of medical application of logistics informatization in the New Crown epidemic in China, combining the characteristics of the New Crown epidemic, and proposes the use of logistics informatization to establish a collaborative information sharing mechanism of logistics integration platform to maximize the timely, efficient, accurate and flexible delivery of logistics informatization to the location of the emergency to the masses affected by the New Crown epidemic and maximize the safety of people's lives.

Keywords: Logistics informatization; Medical applications; New crown epidemic

1. THE BASIC CONCEPT OF LOGISTICS INFORMATIZATION

Logistics informatization, i.e. wireless scanning identification, is a technology that uses cell phone system software to carry out non-contact two-way communication through spatial coupling, and through this form of data exchange so as to achieve identification of the target, commonly known as logistics informatization.

As the use of cell phone system software has a series of advantages such as non-contact data exchange, effective read-write distance, read-write speed, can identify high-speed movement of goods, data memory capacity, high security and confidentiality, read-write penetration, can be used repeatedly, strong resistance to harsh environments. A complete logistics informatization should be composed of RFID data collector, middleware or interface, application cell phone system software and information management platform; among them, cell phone system software data collector contains tag, chip, reader and antenna, this unique feature of cell phone system software makes logistics informatization different from the traditional bar code technology.

The electronic tag with information enters into the effective magnetic field area, when the reader sends out a certain frequency of RF query signal through the antenna, then the electronic tag is activated by virtue of the energy obtained from the induction current, and the information stored in the chip is sent out through the built-in antenna after decoding by itself. The reader's receiving antenna receives the signal and transmits it to the reader. Next, the reader demodulates and decodes the received signal, and the decoded information is finally delivered to the information management platform through the application system software for corresponding processing and control.

2. ANALYSIS OF MEDICAL APPLICATION OF LOGISTICS INFORMATIZATION IN THE NEW CROWN EPIDEMIC

Logistics informatization is based on certain logistics equipment, technology and logistics management information system, effective integration of upstream and downstream resources of channels in the new crown detection, optimize the process of acceptance, storage, sorting, distribution and other operations in the supply, sale, distribution and transportation of new crown detection, through the application of automation, information technology and efficiency and other technologies, so as to improve the processing capacity of the new crown detection orders, reduce the new crown detection errors, and Reduce the inventory of new crown inspection products and shorten the distribution time, further reduce the cost of new crown inspection, improve the level of service and efficiency of the use of funds for new crown inspection.

2.1 New Crown Test Specialization Level Requires High

The new crown test is different from ordinary hospital testing, fast, accurate and timely is always the most important. New crown detection in the application down from the application, before putting into circulation, the first cell phone scan. Reasonable packaging can prevent pharmaceuticals from being contaminated during the logistics process, ensuring the quality and health safety of drugs in the logistics process. Whether it is transport packaging or testing packaging, its most basic should have a certain degree of protection, can play a barrier, closed, shading and other functions, so as to prevent the external environment and harmful microorganisms on the pharmaceuticals. In the selection of materials, first of all, must ensure that it does not react with pharmaceuticals, but also to prevent different pharmaceuticals from reacting with each other, and can meet the relevant pharmaceutical hygiene rules and standards. Secondly, we must ensure the integrity of the new crown test packaging materials or the bearing container itself, cleanliness, non-toxic and harmless, non-polluting, odorless.

The "new crown test product logistics" is a dynamic process. Then in this dynamic process, it is necessary to ensure the smoothness of the new crown test products. New crown testing logistics operation requires a high level of mechanization and automation. In addition, the operation of new crown inspection logistics process also requires the development of the corresponding standard operating procedures (SOP). In layman's terms, each operation of the new crown inspection logistics operators can find a reference standard; to ensure that the new crown inspection products whole enough to safely and smoothly complete the entire logistics activities.

New crown testing products in the process of circulation, for its own environment in the high requirements, such as transportation, storage and other aspects of the temperature, humidity and radiation. Temperature and humidity in the warehouse and means of transport should be selected and adjusted according to the type and characteristics of the new crown test products object, according to the different temperature and humidity requirements, should do a good job of sub-storage, while choosing different means of transport. Such as some drugs stored at room temperature or with ordinary means of transport can be, while some drugs need to choose insulation warehouse or refrigerated transport vehicles. New crown test products in storage and transport, the same need to maintain the cleanliness of the new crown test warehouses and means of transport, to do regular cleaning and disinfection in accordance with the relevant medical and pharmaceutical hygiene requirements.

Therefore, in the entire new crown test logistics process, whether it is the choice of logistics facilities and equipment and packaging materials, environmental control of the distribution process, or the operation of logistics operations, are required to have a certain level of specialization.

2.2 RFID in the New Crown Inspection Logistics System Application

According to the China Information Industry Chamber of Commerce released: China's radio frequency identification technology (RFID) market size has ranked third in the world, second only to the United Kingdom, the United States. This means that the initial formation of China's Internet of Things (IoT) industry chain, IoT applications are gradually promoted.

The new crown inspection logistics information system is a professional logistics information system serving the new crown inspection products industry. According to the circulation process of new crown inspection, the logistics information system of new crown inspection products can be divided into several modules - new crown inspection system, transportation subsystem, storage subsystem, distribution subsystem, and new crown inspection service subsystem(As shown in Figure 1).

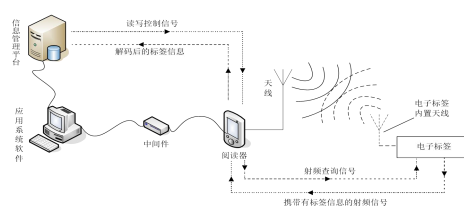


Fig. 1

New crown inspection from the beginning of the detection process, the use of RFID tags to record the new crown inspector, new crown inspection date new crown inspector specific information and other basic information to ensure control of new crown inspection from the source. RFID tags among the information recorded in the new crown detector, to facilitate the various government prevention and control office to understand the new crown detector details.

When every ten individuals for a group of testing, there will be a new package - test tube packaging, and this is the beginning of the inflow of new crown detection testing. At this point, it is necessary to attach an RFID tag to each package of New Crown test, and this tag records the unique product code number, which also serves as its unique code for future circulation, sales and recycling. Thereafter, the new crown test staff with a reader can strictly test the legality of medical drugs. At the same time, the tag needs to be docked with the previous raw material tags to ensure the integrity and smoothness of the entire information chain.

In the new crown inspection process, through RFID can record the basic information of the new crown inspector, so that you can master some new crown inspection to ensure the safety of the new crown inspection can be checked; at the same time, when the new crown inspection needs to read the information in the health code, you can also look up the new crown inspection information to find the time and institutions that need the new crown inspection. By analyzing the application of RFID in the whole new crown test logistics system, it can be found that a set of public information system needs to be applied in the whole supply chain in order to be able to realize the seamless exchange, reading and writing of new crown test information.

2.3 Nucleic Acid Testing has High Requirements for Logistics Informationization

Nucleic acid testing is different from general examination, the accuracy and safety of nucleic acid testing itself is crucial to people's health and even life safety. When medical workers in nucleic acid testing, they need to fully understand the people's personal information, such as identification numbers, names, and so on. Nucleic acid testing logistics information does not only include the basic information of nucleic acid testing, but also includes medical drug storage information, transportation information, distribution information, query information, etc.

By inquiring about the entire citizen information process such as people's information, it is possible to identify which specific citizen is performing the nucleic acid test. In addition, once the nucleic acid test positive security incidents, through the perfect logistics information system will be able to query the individual and co-testers, while you can track the whereabouts of other relevant personnel specific information, and take timely epidemic prevention and control measures to prevent the expansion and spread of the epidemic.

3. RFID IN THE COLD CHAIN NEW CROWN DETECTION LOGISTICS OF THE DISTRIBUTION CHAIN DESIGN

There are many shortcomings due to barcode technology. For example, the inbound link, you must manually scan the new crown detection one by one; new crown detection storage link, can not be real-time monitoring of the new crown detection holding tank temperature, which will not be able to ensure the quality of the new crown detection cold chain products; outbound link, check and scan the new crown detection object, labor-intensive.

RFID technology can be a good solution to the many shortcomings of the new crown detection products in the distribution process, RFID technology can dynamically collect new crown detection data data new crown detection collection system, identification distance can be out of sight; RFID tags can also store a large number of new crown detection information, and can be continuously updated, so that it can be used to identify the new crown detection, to achieve real-time tracking of the status of the product.

3.1 New Crown Inspection into the Warehouse Operations

First, in the new crown inspection into the warehouse operations, when the new crown inspection products have been packaged, in order to facilitate distribution, workers can box them according to regulations. After loading, the outer packing box is attached with RFID temperature New Crown inspection label, RFID has been recorded in the New Crown inspection box of the product information, the temperature sensor inside the label can provide real-time temperature information during the storage and final distribution of goods to ensure the quality of New Crown inspection products. Next, similar goods are loaded onto pallets with RFID tags. The information written in the RFID tags on the pallets includes the basic information of all products on the pallets. Finally, forklift is used to carry into

storage.

3.2 New Crown Detection Storage Link

Next, the new crown detection storage link. The new crown detection object is ready on the warehouse shelf, waiting for the outgoing storage. Before that, the cold chain new crown detection warehouse must also be responsible for these cold chain new crown detection products stored at low temperatures to ensure that before leaving the warehouse, the new crown detection products are safe. This time, RFID temperature tags can be useful. Once there is an abnormality, the system will alarm, the warehouse's new crown detection administrator can promptly check to remedy. Similar to the traditional distribution center, a part of the stored goods out of the warehouse as the new crown inspection products, the rest of the goods as inventory to continue to be stored. The RFID chip of the pallet mentioned in the previous section records the information of the pallet including the type and quantity of New Crown inspection products and the location of the New Crown inspection pallet. When the goods on the pallet out of storage, the pallet RFID chip information will be updated in a timely manner, because the pallet information system and the cargo information system is linked, so the system will specifically show that at this time a shelf of the cargo position of a certain pallet without goods, while updating the inventory information.

3.3 New Crown Detection Out of the Warehouse Link

Again, the new crown detection out of the warehouse link. Distribution center receives the new crown detection demand information, ready to ship. Similar to the inbound operation, after the application of RFID technology, verification of information and outbound is also completed simultaneously. In the entire inbound to outbound process, the use of RFID technology, from loading to the shelf operation, inspection and outbound operations all procedures in one step, greatly reducing the workload of new crown inspection, saving time and improving the efficiency of the new crown inspection outbound operations; as a result of reducing the amount of new crown inspection warehousing link, it will improve the safety of the new crown inspection outbound link.

Finally, the new crown inspection distribution operations. After the new crown detection of goods out of storage, loaded on a professional refrigerated truck, distribution to the new crown detection of the designated delivery point.

LOGISTICS INFORMATION TECHNOLOGY IN THE NEW CROWN EPIDEMIC IN MEDICINE IN THE PRACTICAL APPLICATION OF INTERPRETATION OF

4.1 New Crown Detection in the Batch Generation of Nucleic Acid Detection Bar Code

There are two ways to generate nucleic acid detection barcodes in bulk in the new crown detection, one is the new crown detection database to import their own nucleic acid detection barcode data prepared in advance, the second is to directly use the data generation function in the new crown detection software to generate nucleic acid detection barcode data, such as sequence generation flowing barcode. The following is an example of sequence generation flowing nucleic acid detection barcode, using the new crown test barcode printing software batch generation of nucleic acid detection barcode.

In the new crown test barcode label printing software to create a new blank label, label size custom settings, you need to print their own nucleic acid detection barcodes according to the printer loaded in the label paper size to maintain consistency (As in Figure 2).

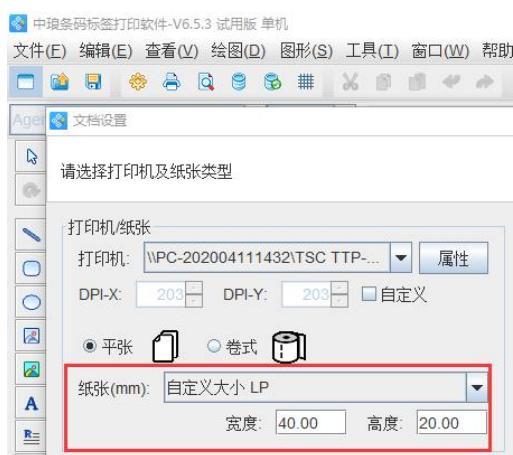


Fig. 2

Use the "Draw 1D Code" tool in the left toolbar of the barcode printing new crown detection software to draw a barcode in the blank position of the label, double-click the barcode to open the barcode "Graphic Properties" - "Barcode" a, set the barcode type (the default barcode type is code128, the general nucleic acid detection barcode is code128 code, if there is a need for other types can choose their own) (As in Figure 3).

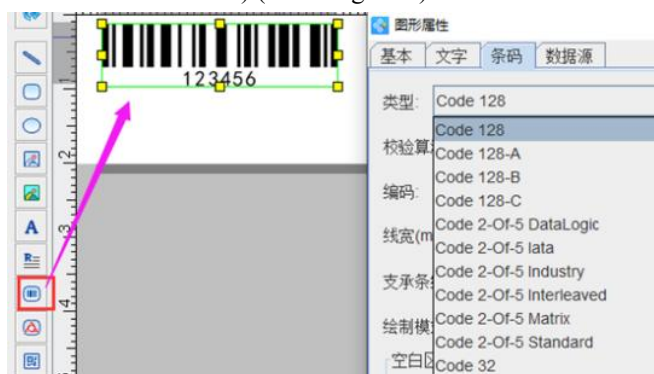


Fig. 3

Then click the "Data Source" column, click the "Modify" button below the data object to pop up the data object management window to modify the nucleic acid detection barcode data, set the data object type "Sequence Generation" Then click "Modify" button below the data object to bring up the data object management window to modify the nucleic acid detection barcode data (As in Figure 4).

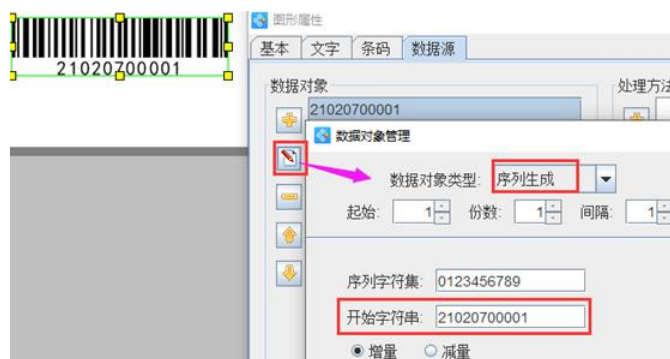


Fig. 4

You can also add some other information to the label, such as date, text, etc. After the nucleic acid detection barcode is generated, you can print the preview to see the effect of batch generation (As in Figure 5).

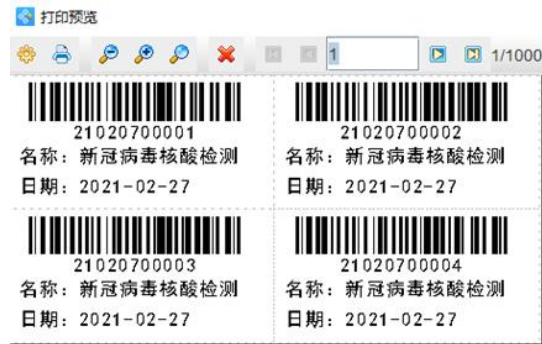


Fig. 5

In summary, this shows how to generate nucleic acid detection barcodes in batch with New Crown test barcode printing software. New Crown Detection Software supports batch generation of all types of barcodes, so you can download New Crown Detection Software if you need it!

4.2 Provide Logistics Management Information for Nucleic Acid Testing Laboratories

Nucleic acid testing barcode technology is applied to the entire process of specimen analysis, from application → nucleic acid testing → sampling → nuclear receipt → quality control → pre-analysis processing → analysis process → post-analysis processing → entry into MinZhengTong → query nucleic acid testing technology throughout to form a scientific and standardized nucleic acid testing workflow. At the same time can provide accurate and reliable information for nucleic acid testing, rationalize personnel and speed up nucleic acid testing reports.

4.3 Conducive to the Standardization of Test Instrument Operation and Functional Utilization

Most of the test instruments, such as biochemical analyzers, hematology analyzers, immunoassay analyzers, etc., support two-way communication, bar code technology. Make full use of these features to simplify and standardize the operation of the test instrument, such as: input specimen number, test items, before and after the order of manual operation steps to reduce the work intensity of the operator, but also give full play to the functions of the test instrument, thereby improving efficiency and test quality.

4.4 Query Test Results Through the Internet

Nucleic acid test results are published on the Internet, and nucleic acid testers can use cell phone software to query the results or test progress, so that nucleic acid testers can obtain nucleic acid test results more easily and quickly. Bar code is the unique identification of nucleic acid test specimens, nucleic acid test people through the cell phone software information query.

2. OUTLOOK: PROSPECTIVE ANALYSIS OF LOGISTICS INFORMATIZATION FOR MEDICAL APPLICATIONS IN THE NEW CROWN EPIDEMIC

Logistics information technology RFID solutions can provide accurate information, including transfer points, nucleic acid testing status and operations, so that managers can quickly identify and correct inefficient operations, and thus can focus resources on developing solutions that provide the best return in terms of operational efficiency and nucleic acid testing safety, thus achieving rapid and maximum nucleic acid testing costs, which is particularly important in nucleic acid testing. This is particularly important in nucleic acid testing.

RFID technology is advanced in the use of radio waves, non-contact, long-distance, dynamic multi-objective simultaneous transmission of identification information, realizing a true "one item, one code", allowing fast and accurate nucleic acid testing, thus eliminating manual intervention, saving a lot of manpower, and greatly improving work efficiency, all of which is very attractive for efficient. This is a great attraction for efficient nucleic acid testing.

management. In addition, RFID technology can achieve the following goals and obtain the expected benefits by tracking goods in all aspects of logistics and grasping the dynamic information of goods in real time: ① Shorten the operation time. ② Improve the quality of nucleic acid detection. ③ Increase the efficiency of nucleic acid detection. ④ Reduce the cost of nucleic acid testing. It can also solve the problems of nucleic acid testing industry ⑤ Realize visual management. In addition, cost is the root cause of the restriction of RFID in nucleic acid testing applications.

The most significant effect of RFID technology application is to improve the service quality and operational efficiency of nucleic acid testing system. By tracking the destination of nucleic acid tests through RFID, not only can the market of nucleic acid tests be regulated, but also the safety of the public can be ensured by timely retrieval of nucleic acid tests with safety incidents.

Although RFID technology has just started in the field of nucleic acid testing, it is believed that RFID technology will cause a change in the field of nucleic acid testing logistics and become an economic growth point in the field of nucleic acid testing in the future, creating the value it deserves.

3. SUMMARY

By tracking the destination of nucleic acid tests through RFID, we can not only regulate the nucleic acid testing market, but also retrieve the nucleic acid tests that have safety accidents in time, so as to protect the health and life of the public. The application of RFID in nucleic acid testing to achieve the full visualization of nucleic acid testing from the supply to the demand, real-time tracking and command and control of materials in transit, to maximize the assurance of timely, efficient, accurate and flexible nucleic acid testing, which will greatly improve the status of nucleic acid testing, so that nucleic acid testing at the forefront of science and technology, to maximize the protection of people's lives. The most significant effect of the application of RFID technology is to improve the quality of service and operational efficiency of the nucleic acid detection system. Although RFID technology has just started in the field of nucleic acid detection, it is believed that RFID technology will cause a change in the field of nucleic acid detection and become a future economic growth point in the field of nucleic acid detection, creating due value.

COMPETING INTERESTS

The authors have no relevant financial or non-financial interests to disclose.

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