INTELLIGENT OUTPATIENT
PHARMACY SYSTEM

INTELLIGENT OUTPATIENT PHARMACY SYSTEM

System Introduction

User Friendly Environment
By virtue of various transmission methods, the system effectively reduces workload, improves personal efficiency, and reduces patient waiting times, thereby making the pharmacy more professional and orderly.

System Advantages
The smart system provides effective solutions for high-frequency and largebatch access of medicines, improves the automation level, and reduces the frequency of medicine loading and access to the medicines.

System Management
The medicine buffering system, together with the rapid dispensingsystem, intelligent access system, intelligent pharmacy shelf, structured medical order system, and queue management system, forms an integrated intelligent pharmacy management system.

① Automated Medicine Secondary Buffering Area
Based on the dual-manipulator access system, the medicines are automatically stored in the automated secondary storeroom, and depending on the medicine consumption, the storeroom will automatically generate medicine requests to transmit the information concerning the medicines that need to be replenished.

② Automatic Dispensing Area
Boxed medicines are directly sent to the front desk through the overhead transmission system, and prescription medicines will be automatically delivered to the pharmacists in intelligent medicine baskets through the transmission system after the overall dispensing is completed, so the dispensing personnel remain in one location, with no need to manually collect the medicine as they are delivered directy to the personal work station.

③ Mixed Prescription Area
It is used to make up the mixed prescriptions of special-type packaged medicines or injections. After collecting and checking the medicines, it will send them to the front desk of dispensing through the medicine basket transmission system.

### ④ High-speed Dispensing Area
As an exclusive dispensing system for the delivery of large quantities of medicines, it features efficient storage for such medicines and can dispense at a rate of more than 4 boxes per second in every single slot.

Automated Boxed Dispensing Machine

- Medicine uploading: Based on the dual-manipulator medicine loading (uploading speed: ≥2500 boxes/hour) and the rear-mounted batch medicine loading buffering mechanism, medicine dispensing and replenishing can be performed simultaneously.

- Inventory counting: Unattended, quick, and accurate inventory counting

- Storage capacity: ≥20000 boxes of medicines

- Speed: 450~550 prescriptions/h

- Convenience: Both the width and interlayer spacing of the medicine storage tracks can be adjusted as needed to improve the space utilization rate.

Product Parts
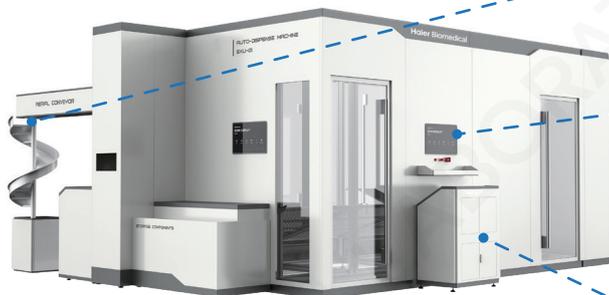
Directly Sending to the Transmission System
The medicines in the equipment are delivered to the corresponding windows directly

Bottled Medicine Replenishing Function (Automatic Withdrawal Function)
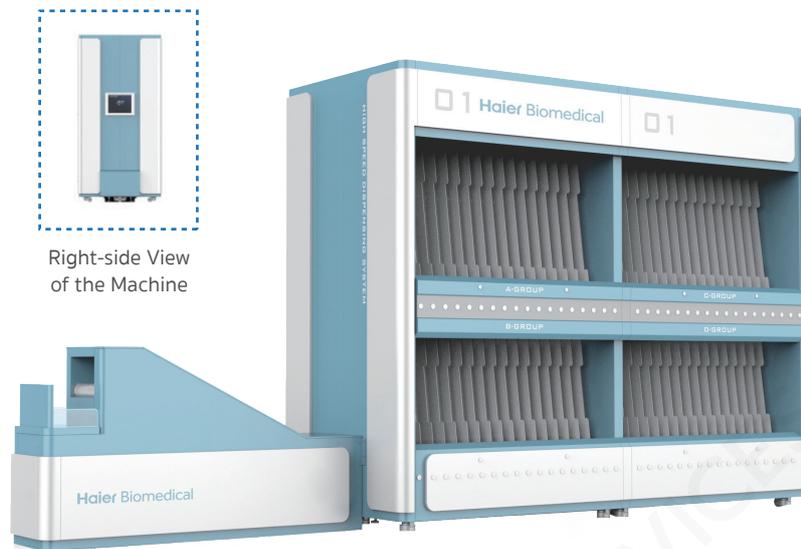
Batch Medicine Replenishing System

- Dispensing: Dual manipulators dispense simultaneously

- Storage capacity: Up to 60,000 boxes

- Support equipment: Refrigerated medicine management system and automatic medicine cleaning system

- Medicine replenishing: Unattended fully-automatic medicine replenishment

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High-speed Dispensing Machine

Right-side View
of the Machine

Based on a modular design, it is a perfect fit for the fully-automatic rapid dispensing machine. After receiving the prescription information, the unit can send the medicines to the outlet of the rapid dispensing machine automatically. It is used for boxed medicines that are used frequently and consumed in large quantities. It uses stacked storage and other innovative methods to store such medicines uniformly.

It can be seamlessly connected to the hospital HIS system and supports both online and manual control modes.

Function Description

- Each module of the built-in high-speed dispensing machine comprises 44 to 52 storage positions (in two layers), and each storage position can store 65 to 120 boxes of medicines. The total storage capacity reaches more than 4000 boxes.

- The stand-alone high-speed dispensing machine comprises multiple modules.

- The dispensing speed of a single channel can reach 4 boxes per second, and the processing of everysingle prescription takes only 3 seconds. More than 3 channels can be used for dispensin g at the same time.

- Automatic positioning indication is available during the medicine replenishing to enable stacked-type batch medicine replenishing. Multiple users are allowed to upload medicines at the same time, with each person uploading 100~150 boxes per minute.

- Startup self-check function, emergency stop protection, light curtain protection at the medicine collection opening, and motor overheating, overcurrent, and overload protection are available.

Intelligent Anaesthetic and Tranquilizer Management Machine

Function Description

- Real-time counting and inventory function

- Applications in pharmacy: Storage and management of narcotic drugs, psychotropic drugs, and high-risk drugs

- Capable of exchanging medicine information with HIS via instant messaging terminal software

- Monitoring and identification: card reading, fingerprint, video surveillance, and encryption password; multi-level permission management

Product Advantages

Drawer indicator lights
Used to indicate the positions of the medicines (and can process different types of medicines separately to ensure the safety of medicine dispensing and storage)

LCD touch screen
The touch screen presents the prescription information and medicine information directly

Scanning gun
Medicine scanning during storage (medicine bar code recognition and addition function)

Camera
Used to monitor the identity of medicine collection personnel and the types and quantities of the medicines collected

Thermal printer
It can print prescription information, including patient names, medical orders, corresponding windows, etc.

Card reade
Used for user badge identification and authority management

Fingerprint identification
Used for user badge identification and authority management

Mechanical lock
It allows mechanical unlocking in the case of power failure or any failure of the machine

Intelligent Mixing Machine

- **Efficient**
It can be connected to the hospital HIS system for real-time data exchange, receive prescription information automatically, and prompt the dosing positions intelligently. It operates following the optimal paths to effectively improve dispensing efficiency.

- **Secure**
Based on the safety light curtain design, the equipment will stop automatically in the case of any error in operation to ensure the safety of the pharmacists.

- **Intelligent**
Intelligent alarm prompts are available when the medicines in stock reach their lower limits. The required medicines can be automatically transferred to the pharmacists, and the LED lights will indicate the exact positions of the medicines.

- **Optimized medicine management**
The equipment can monitor the inventory/expiry date management of the medicines in real time. It can be used alone, online with multiple other machines, or online with the outpatient system.

Intelligent Injection Cabinet

- Automatic distribution of ampoule and penicillin bottles of different sizes
- Automatic inventory counting function
- Also capable of distributing boxed medicines at the same time

Intelligent Pharmacy Shelf

- Intelligent medicine access for outpatient, emergency, inpatient, PIVAS, and large-pack medicines.
- Indicating the medicine positions automatically and displaying the medicine name and inventory quantities at the same time.

Note: LED indicator lights can be used to indicate the positions directly.

Entire Prescription Transmission System

- There is no need to place the intelligent medicine baskets in sequence. As an RFID card reader device is available at the corner of each buffering area, the system automatically reads and writes the information of the intelligent medicine baskets and automatically distributes them to the designated windows.

- Capable of customizing the inlet and outlet buffering areas depending on the actual field distribution of the windows

- Reducing the walking distance and work intensity of the pharmacists.

Single-/Double-Outlet Basket Dispensing Machine

It can dispense medicine baskets automatically after binding corresponding prescription information to them and print patient information and medicine list.

Intelligent Medicine Basket

They are self-luminous medicine baskets and do not need to be placed in fixed positions. They help to locate medicines quickly.

Remarks: The battery in each basket can last 300 days on a single charge.

Prescription Checking System

The present invention provides an automatic medicine checking system, which comprises a database connection module, a sample picture entry module, a prescription information acquisition module, an image acquisition module, a checking module, and a feedback module, wherein:

- The sample picture entry module is used to input the appearance of all medicines that may be dispensed in the pharmacy into the database of the present system as the sample appearance pictures

- The feedback module is used to give back the checking results to the dispensing pharmacists

- The prescription information acquisition module is used to obtain the prescription information required by patients from the database of the HIS system through the said database connection module

- The database connection module is used to connect the database of the present system with the database of the HIS system

- The image acquisition module is used to acquire the images of the medicines to be dispensed

- The checking module is used to identify the said images acquired for the medicines to be dispensed according to the sample appearance pictures of medicines in the system database so as to complete the automatic checking of the medicines to be dispensed

Medicine Replenishing Machine

- It supports 24h unattended automatic medicine loading;

  The medicine replenishing robot is capable of rotating freely at 360 degrees to grab medicines accurately (the medicines in the buffering area can be placed at will);

- The high-definition camera plus AI intelligent algorithms can accurately check the images and text on the outer packaging of medicines and check the bar codes of medicines at the same time to realize error-free dosing;

- The equipment can achieve seamless connection with subordinate systems (such as the dispensing machine replenishing system) to acquire the medicine inventory information in real time, reduce the number of medicine replenishing staff required, and improve the degree of automation.

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Intelligent Outpatient Pharmacy System

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24-Hour Unattended Pharmacy

A flexible medicine delivery drive unit is available

- Storage: It can store 70~140 kinds of medicines
- Inventory: Medicine shortage reminder function
- Medicine uploading: Automatic indication function for medicine uploading
- Storage capacity: ≥1000 boxes of medicines
- Convenience: Both the width and interlayer spacing of the medicine storage tracks can be adjusted as needed to improve the space utilization rate.

Product Advantages

- The receipt printing function is available;
- It comes with symptom-oriented purchasing procedures/medicine search purchasing procedures;
- It supports online consulting and video diagnosis functions
- The payment system not only supports cash payment, bank card payment, and medical insurance card payment but also can be combined with the pharmacy sales system.
- It is suitable for hospitals, outpatient clinics, and 24-hour drugstores and supports self-service prescription dispensing through prescription scanning. Also, it supports face-scanning payment and body temperature measurement functions.

24-Hour Unattended Pharmacy (For Injections)

Product Features

- Manipulator dispensing: This product stores injections and oral medicines separately and uses manipulators to grab the medicines so as to ensure 100% correct dispensing, prevent the injections from being broken, and eliminate less and missing dispensing, etc.
- Visual AI dispensing review: It can eliminate dispensing errors arising from the artificial misplacement of medicines.
- Compact structure: As the front door is used for medicine reple nishing, the rear of the equipment no longer needs to reserve space for medicine replenishing, and the equipment can be pressed against the wall
- Self-service payment: Through access to the hospital charge system, the equipment supports various payment methods, including medical insurance card payment, mobile phone scanning payment, etc.

- Self-service printing: The equipment supports the printing of invoices and the usage and dosage receipts
- Automatic inventory counting function: Capable of automatic inventory counting for the medicines in the storeroom
- Medicine shortage warning: When any medicine is in short supply, the product will notify relevant pharmacists automatically through 5G
- Medication consultation: After clicking medication consultation, the patients can be connected to the relevant pharmacists automatically for medication consultation remotely

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Sub-packaging Machine

Product Advantages

Patented Structure Design
- Patented T-shaped sliding chute design
- Efficient layout for efficient sub-packaging
- Truly enabling medicine replenishing without shutdown of the equipment

User-friendly Features
- Intelligent medicine falling parameter settings
- Automatic multi-bag sub-packaging
- Personalized medicine bag printing format
- Personalized recording for voice alarm prompts

Fully Intelligent Medicine Box
- Universal medicine box
- Freely expandable space
- MDU manual dispensing tray

Function Description

PC Touch Screen
The 13-inch high-sensitivity touch screen allows flexible adjustment to adapt to different working angles and facilitate operations.

Built-in Emergency Stop Button
It can avoid the unexpected interruption of the equipment during operation.

Extendable Machine Body Workbench
It can provide a more convenient work space, adapt to efficient working processes, and bring a better operation experience to users.

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Dismounted Medicine Sub-packaging Machine
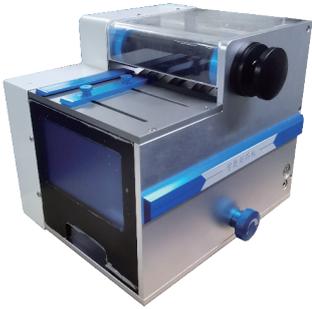
- It can strip the medicines of various aluminum bubble-eye packages;

- Spacing adjustable;

- Automatic stripping;

- Can eliminate the contamination arising from manual operations.

- It can be used together with the intelligent dispensing system in the outpatient pharmacy and inpatient pharmacy.

- It can be used to deal with dismounted medicines and store more than 78 kinds of medicines in a single device.

- It supports dual-channel simultaneous medicine delivery.

- As for the sub-packaging of cipher prescriptions, it can pick up the medicines one by one and label them.

More than 78 kinds of medicines
A single device can store

High-speed Sub-packaging and Medicine Falling

Bar Code Identification of Medicines

Convenient Daily Maintenance

- Enabling fully-automatic tablet and capsule counting

- Can be used for the automatic counting of cipher prescriptions

- Supporting dual-channel simultaneous counting

- Can eliminate the contamination arising from manual operations

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Intelligent Operating Room Behavior Management System

Based on the Internet of Things, we have customized personnel management solutions starting with user experience.

Haier Biomedical provides the most advanced management consulting, solutions, information software, and services for customers in the medical care and health fields. As the provider of smart medical care integrated solutions in China, we engage in the overall planning, software development, system integration, operation and maintenance services, standard system construction, etc., and focus on the construction of intelligent regional medical care and digital hospital information system.

Applicable Scenarios

The product aims to set up an operating room medical behavior management system in hospital operating rooms based on RFID technology and automatic gown dispensing and recovering technology. It integrates the automated access management of medical staff, the automatic dispensing and recovery management of operating gowns and operating shoes, the automatic identification and intelligent management system of gown and shoe changing cabinets, and the management of the operating room automatic doors to build an integrated solution to the intelligent operating room cleanliness management and medical behavior traceability.

Advantages of the Solution

Efficient Management
- Transformation from artificial flexible management into systematic rigid management

- Access control and behavior control of the medical staff and temporary staff

- Clothing management to effectively reduce financial costs

- Reducing the clothing inventory base and the labor intensity of auxiliary staff

Better Services
- The solution can ensure the punctual arrival of medical staff and improve patient satisfaction.

- The intelligent gown dispensing function can help solve the congestion during rush hours

Enhanced Infection Control
- The post-operation clothing control can reduce cross-infection risks.

- The personnel access control reduces the hospital infection risks.

- Intelligent storage space management can improve the effective use of the gownchanging transit environment and make the environment more tidy.

- The solution can improve the opera ting room environment and the working efficiency of medical staff.

A Good Aid to Decision-making
- It can perform medical staff performance appraisals.

- The multi-dimensional report data can help in management decision-making.

Product Advantages

Intelligent Dispensing
The rich UI interfaces can display the equipment running status, operation schedule, whether gowns arrive at the outlet, replenishing reminders, and other information in real time.

Process-based and Traceable
The service status of all devices is displayed graphically, and the personnel behaviors are recorded automatically in the process information system to make the medical behaviors process-based, facilitate later traceability, and provide a guarantee for operating room management.
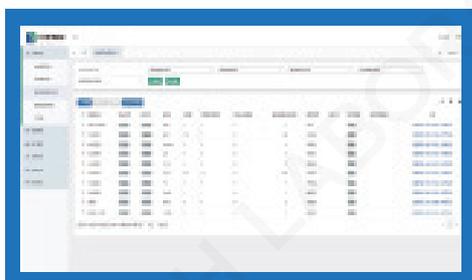
Intelligent Recovery
The system can prompt clothing overflowing and update the recovery data automatically so that the working staff can recover and disinfect the gowns timely and check the quantity quickly.

Dynamic Analysis
Through intelligent analysis, the system can provide data support for management decision-making. For example, it can give suggestions on the purchasing quantities, etc. during the purchase of the scrubs and other materials.

Advantages in Behavior Management

Price Advantage:
Through personnel and behavior management, the clothing losses are reduced by about 28%, and the time spent on gown changing and returning processes is saved by about 78% according to the relevant cases.

Advantages of the Fully-closed Clothing Loop:
Based on the intelligent operating room management system, the surgical clothing can be counted and recorded quickly during the cross-department handover, which facilitates surgical clothing management and prevents the loss and other abnormal damages of the surgical clothing.

Personnel Access:
The system can manage the permissions, access time, and access area restrictions of all types of personnel entering the operating room according to the operation schedule information; for temporary personnel, it offers an automatic terminal for them to fill in the access application and then checks with the front desk.

Advantages in Personnel Behavior Management:
Interns and outsiders are forced to learn the dress code and requirements through the relevant programs before taking the surgical gowns, and they can apply for access only after they have completed such learning. Also, they are not allowed to leave the operating room without wearing a walking dress or failing to return the gowns after the operation, which aims to reduce the risk of cross contamination. After the operating clothing and shoes are returned, the corresponding clothing-changing and shoe-changing cabinets will be released automatically. Also, if any person fails to leave the operating room in a specified time after the operation is completed, the corresponding clothing-changing and shoe-changing cabinets will also be released automatically.

Equipment Management Advantage
The system monitors the running status of each device in real time. In the case of any power failure, it can switch on the UPS power supply automatically to provide an emergency power supply. In addition, it will not be affected even in the case of network disconnection. The equipment is provided with shortage and overflow alarms, and can send an alarm to the front desk workstation when the upper or lower threshold is reached.

Intelligent Medicine Management Cabinet (Main Cabinet + Auxiliary Cabinet)

Scope of Application

Suitable for operating rooms and pharmacy preparation rooms

Function Description

- Automatic batch number checking during medicine replenishing
- Dual display screen technology
- Fingerprint/Password/ID card certification
- Emergency unlocking device
- Empty bottle recovery device
- Main cabinet dismounting and weighing medicine box
- Auxiliary cabinet box-packed medicine weighing box
- Guide/Technology function
- Video recording of the medicine replenishing/collecting process

Specifications

Equipment dimensions	700*821*1170 (length* width*height (mm))
Small medicine box (standard configuration)	48 Pcs
Storage capacity of a single small medicine box	150 Pcs (counted by 1ml ampoule bottle)
Large medicine box (standard configuration)	12 Pcs
Storage capacity of a single large medicine box	20 boxes (counted by the 30*76*20 regular medicine box)
Screen	7" touch display +23" desktop computer display
Power supply power	AC 220V, 50/60HZ, 350W

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Equipment dimensions	802*768*1932 (length* width*height (mm))
Number of layers	7 layers
Total number of medicine boxes	28 Pcs
Storage capacity of a single medicine box	45 boxes (counted by the 130*76*20 regular medicine box)
Total storage capacity	1260 boxes (counted by the 130*76*20 regular medicine box)
Screen	2.8" touch screen
Power supply power	22

Operating Room Intelligent Anesthesia Trolley
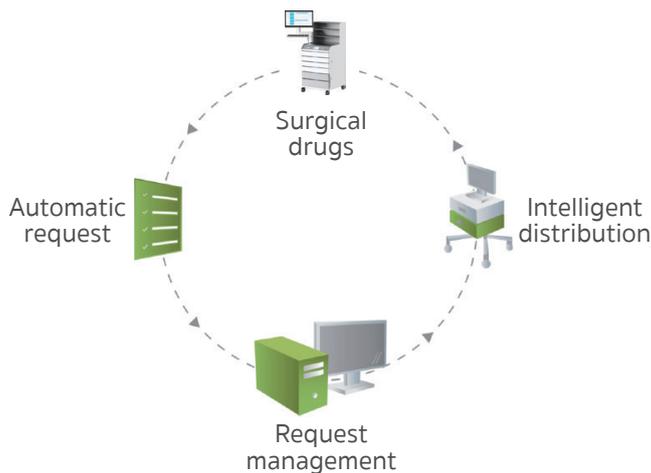
Product Advantages

- Featuring intelligent dispensing navigation and automatic medication recording, the trolley can free up the anesthesiologists so that they can focus on the life care of the patients during surgery.

- Its real-time inventory monitoring and dynamic inventory management make the inventory and distribution management of anesthetic drugs easy, orderly, and evidence-based.

- The integrated system makes the team collaboration smoother and more harmonious and the medical workers and patients more comfortable and satisfied.

- With powerful data mining and process combination capabilities, it also makes management innovation easier and more scientific.

HOH-M-600 Operating Room Intelligent Anesthesia Trolley
It can store the anesthetic drugs safely in each operating room and provide 24h/7d convenient, timely, and accurate drug access.

Through the collaborative management of the intelligent supervision center of the Department of Pharmacy and the intelligent operation center of the Department of Anesthesiology, it can supervise surgical drugs intelligently to deliver a modern hospital intelligent medicine management mode that features dynamic inventory management and intelligent medicine distribution.

Surgical drugs

Automatic request

Intelligent distribution

Request management

Request Management
- Review of the request form and prescription information
- Dispensing
- Generation of the delivery list

Automatic Request
- Automatic request of the medicines depending on the dosage
- Automatic summarization of the request requirements of all intelligent cabinets in the department
- Automatic sending of the request forms to the Pharmacy Department on time

Intelligent Distribution
- Online medicine delivery and checking
- Automaticgeneration of the intelligent cabinet replenishment orders
- Guiding the accurate replenishing of medicines into the intelligent cabinets

Surgical Drugs
- Review of the request form and prescription information Intelligent Distribution
- Dispensing
- Generation of the delivery list
- Automatic request of the medicines depending on the dosage

Product Parts

19" surface Acoustic Wave Touch Screen
- It is easy to operate and features a clear display effect
- It allows u sers to operate while wearing gloves in a surgical setting
- The whole screen is free of dead corners and easy to clean and disinfect.

Flexible Drawer Configuration
Drawers of three safety levels are available for selection to meet the storage requirements of different medicines.

Sensor Drawer
It can sense the opening state of each medicine box automatically to simplify the procedures of medicine dispensing.

Machine Body Operation Screen
The creative machine body operation and control screen is ergonomic and convenient for users to view the information of medicine receiving or replenishing with the best view of field and to confirm the operations.

Secure Drawer
Each medicine box comes with an independent lock, which conforms to the strictest narcotics control regulations.

Guided Drawer
Through the light source, it can guide the medicine dispensing; also, each layer of the drawer can store a maximum of 96 medicines independently, and the drawer also supports the mixed storage of different medicines.

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Operating Room Anesthetic Pharmacy Management System

It conforms to the anesthetic management requirements and makes medicine management more convenient to comprehensively improve the management level of anaesthetic and tranquilizer drugs; it classifies the anesthesia kits according to the surgical drugs and enables the intelligent and on-demand access of the kits; it can monitor the medicines throughout the process (storage cabinets, anesthesia kits, anesthesiologists, and patients).

It can build the integrated management of intelligent terminal equipment to deliver a whole-hospital solution to the management of anaesthetic and tranquilizer drugs and special drugs. It can achieve whole-staff closed-loop management and whole-process monitoring for the anaesthetic and tranquilizer drugs and comprehensively improve the hospital's management level concerning such drugs. It can build an intelligent, information-based, and automated management mode in the operating room anesthetic pharmacy to monitor the flow of each drug in real time and identify the responsible person and supervise and trace the recovery process of each empty bottle, thereby ensuring the safety of the anaesthetic and tranquilizer drugs and special drugs during medicine receiving and using.
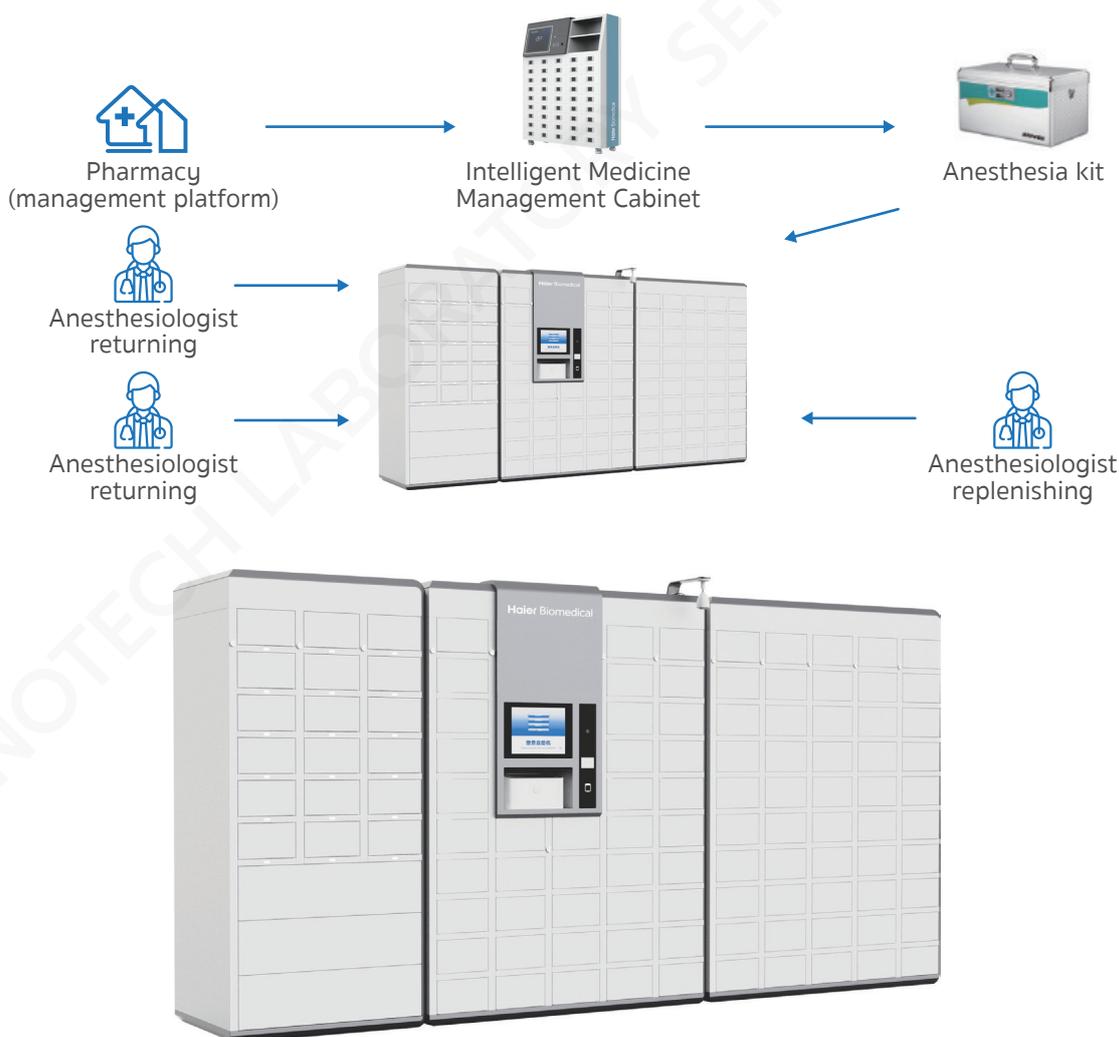
Pharmacy (management platform) → Intelligent Medicine Management Cabinet → Anesthesia kit

Anesthesiologist returning

Anesthesiologist returning

Anesthesiologist replenishing

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