

BeneVision Central Monitoring System

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mindray
healthcare within reach



Medication Safety

Infusion pump provides a high level of control, accuracy, and precision in drug delivery.

At the same time, medication process also associated with persistent safety problems by human factors that may result in wrong infusion rate, over or under-dosage, missed or delayed therapy.

Medication Safety – Challenge

1,004

Events

132

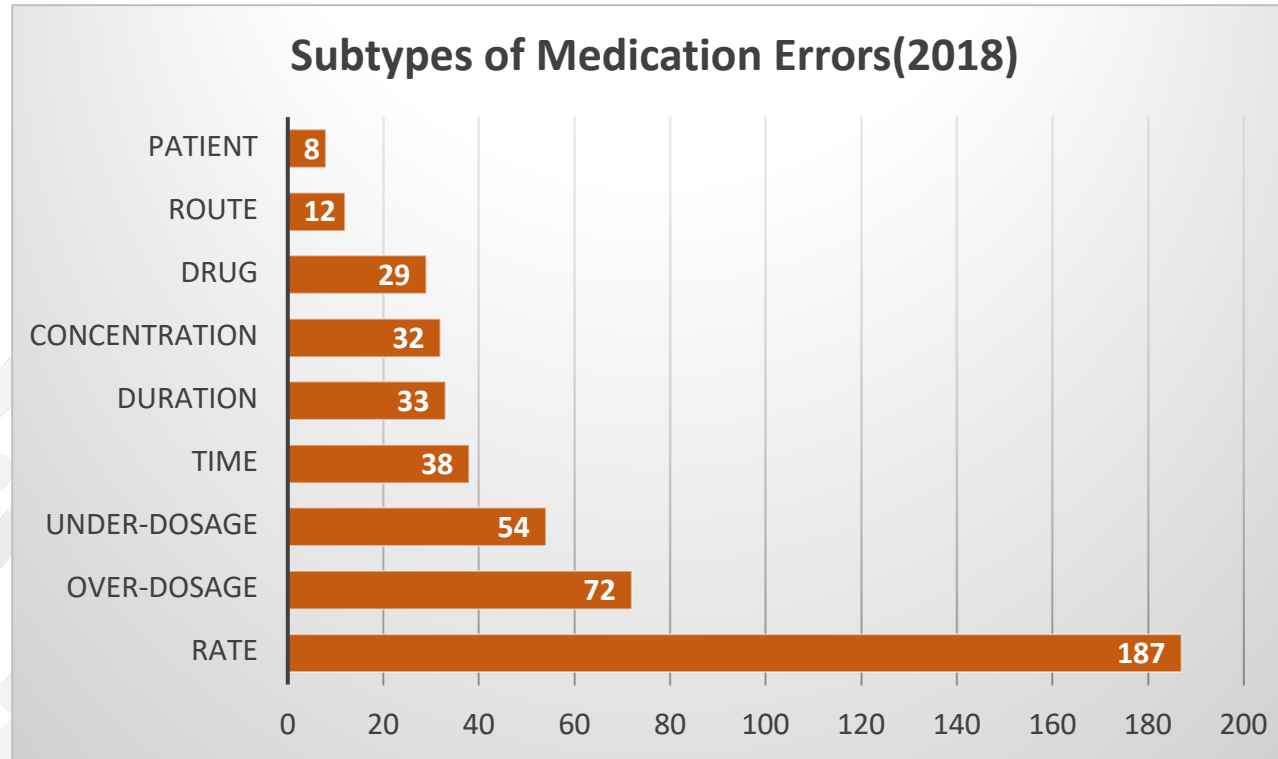
Hospitals

19%

Had a Rate
Error

22%

Involving a
High-Alert
Drug



Wrong Patient

Wrong Drug

Wrong Dose

Wrong Route

Wrong Time

Wrong rate events are mostly caused by entering incorrect setting or value into infusion pumps.

Smart fusion
Safe medication



Medication Safety – Challenge

How?

Right patient

Right drug

Right Dose

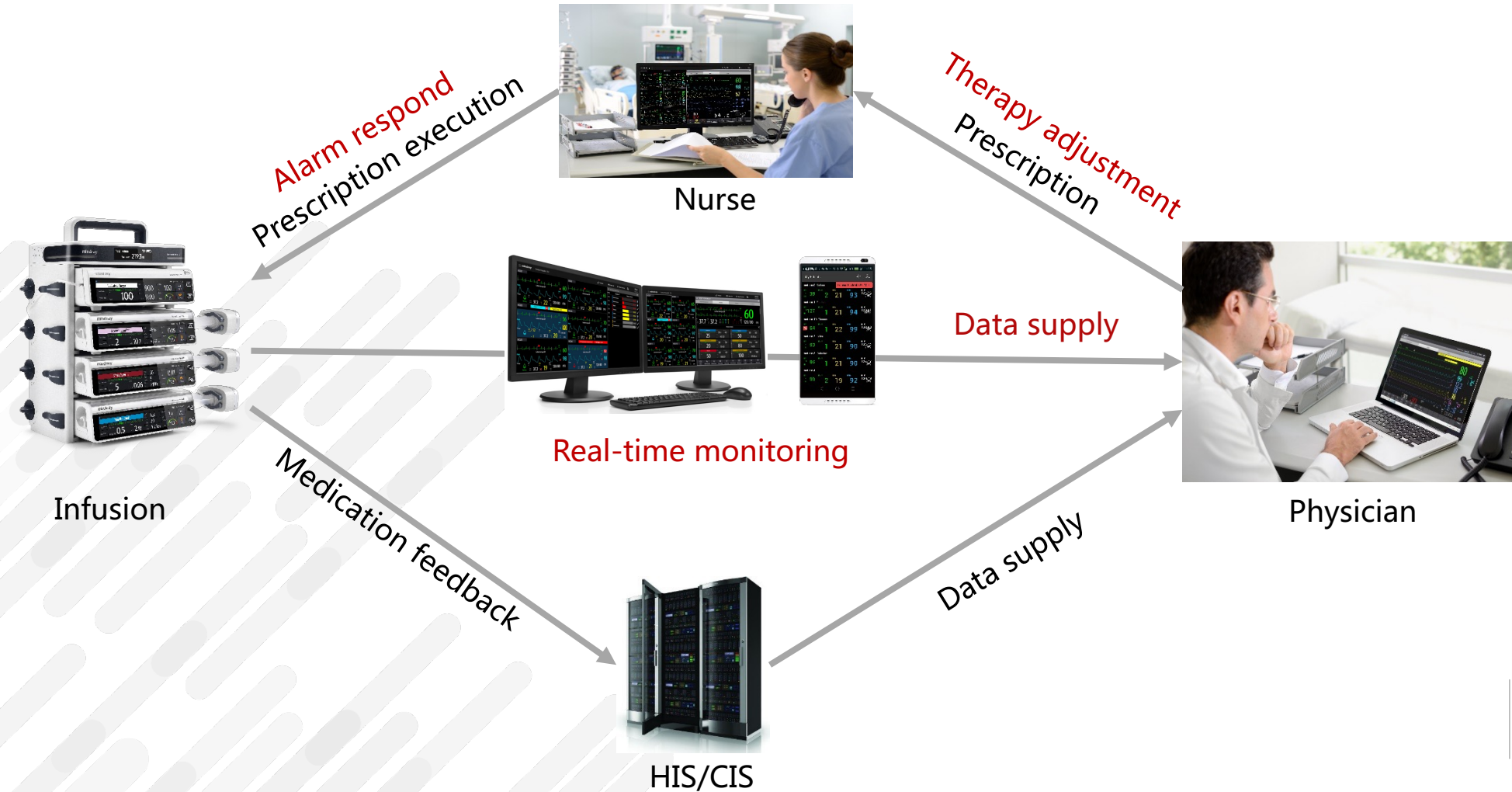
Right Route

Right Time

Smart fusion
Safe medication

Medication Safety – Solution

How?—Closed-loop medication and whole process monitoring



Smart fusion
Safe medication



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- ◆ System Features
- ◆ System Connectivity
- ◆ System Deployment
- ◆ Specification & Order



01



System Features

Your New Monitoring Center



Smart fusion of vital signs and infusion information.

Smart fusion
Safe medication

Your New Monitoring Center

Information fusion for better customer experience.



- More comprehensive information for better assist clinical decision making.
- Lower investment and better patient safety.
- Better space for the nurse station.

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Multi-dimensional Monitoring to Ensure Safety

BeneVision CMS Family



WS(WorkStation)
WS Lite(WorkStation Lite)

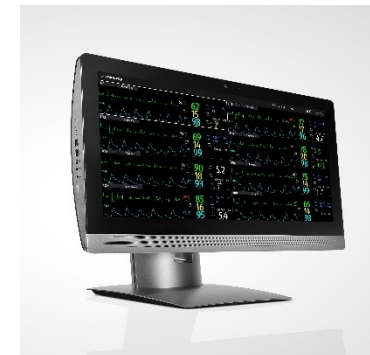


CMSViewer

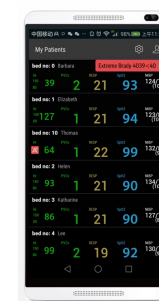
BeneVision Central Monitoring System



CS(Central Station)
With MLDAP



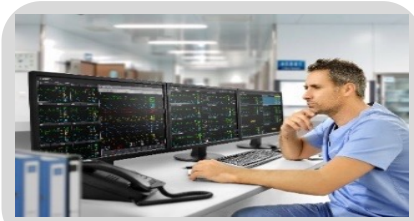
VS(ViewStation)



MobileViewer Smart fusion
Safe medication

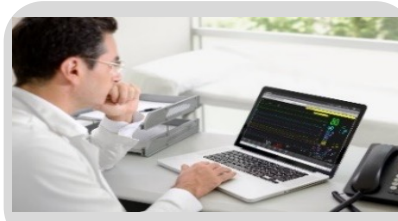
Multi-dimensional Monitoring to Ensure Safety

BeneVision Central Monitoring System is a patient-oriented system. It provides following correlative system components to ensure patients are being monitored anytime and anywhere.



Nurse Station: Central Station

- Centralized infusion and vital signs monitoring, Safe and efficient.



Doctor office: CMS Viewer

- Review the patient's vital signs and medication records, adjust the treatment plan in time.



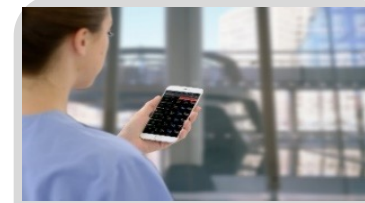
Nurse lounge: ViewStation

- View detailed information from any single patient, anywhere



Bedside: WorkStation

- Nursing record processing and continuous patient monitoring



Handset: MobileViewer

- Get patient data for clinical decision making no matter where you are.

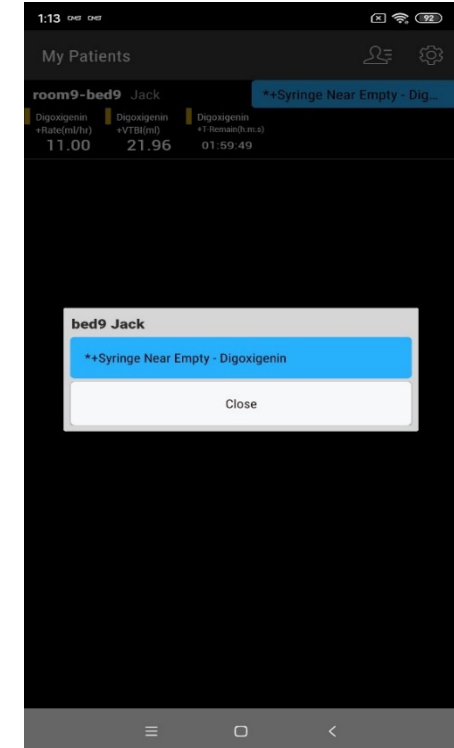
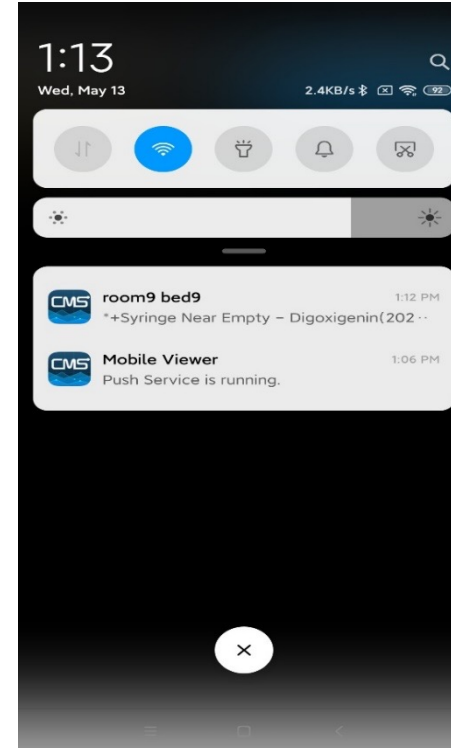


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Multi-dimensional Monitoring to Ensure Safety

MobileViewer

- Real-time infusion and vital signs monitoring.
- Respond to important alarm notification in time to ensure the patients safety.
- Remote guidance anytime, anywhere.



Note: Alarm event notification is only available for Android system.

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Multi-dimensional Monitoring to Ensure Safety

What's the difference?

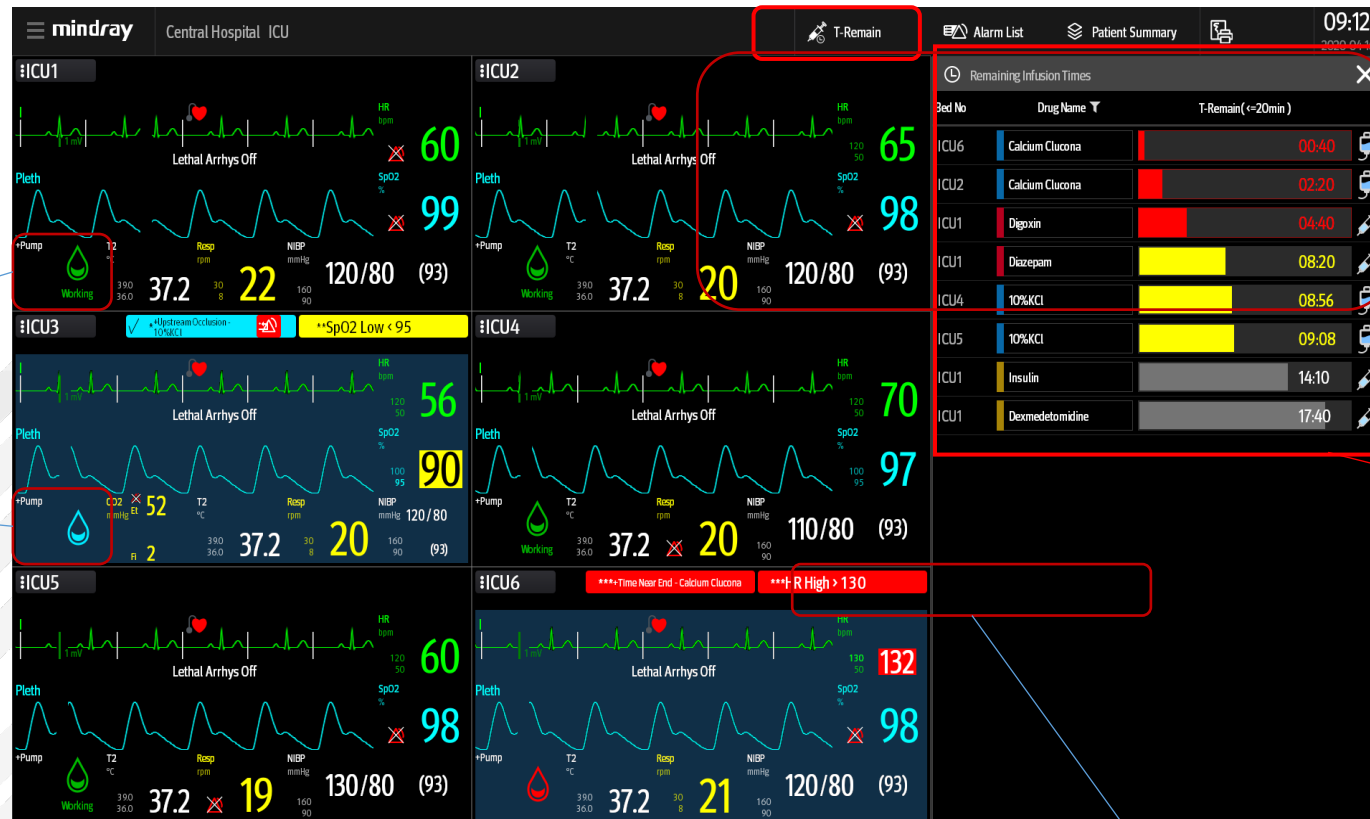
Functions	CS	WS	VS	CMS Viewer	Mobile Viewer	
Connect with patient monitors	Yes	No	No	No	No	Devices and data management
storage monitoring data locally	Yes	No	No	No	No	
Admit / Discharge / Transfer patients	Yes	Yes	No	No	No	Bi-direction control
Manage alarms	Yes	Yes	No	No	No	
Change monitoring settings	Yes	Yes	No	No	No	
Give visual and audio alarm indicators	Yes	Yes	Yes	only visual	only visual	Alarm
Perform real-time monitoring	Yes	Yes	Yes	Yes	Yes	View Patient
Change display settings	Yes	Yes	Yes	Yes	Yes	
Review online patients	Yes	Yes	Yes	Yes	Only events	
Review discharged patients	Yes	Yes	Yes	Yes	No	
Print reports	Yes	Yes	Yes	Yes	No	

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Intuitive Interface, Clear at One Glance

Fusion Mode

Multi-bed Screen



Striking **water-drop** icon with different colors to identify infusion status.

Patient sector:

- Monitoring waveforms and vital signs
- Integrated device waveforms and parameters
- Infusion Status

Remaining Time List to take an overview of the infusion status and remind caregivers to prepare for patient care in advance.

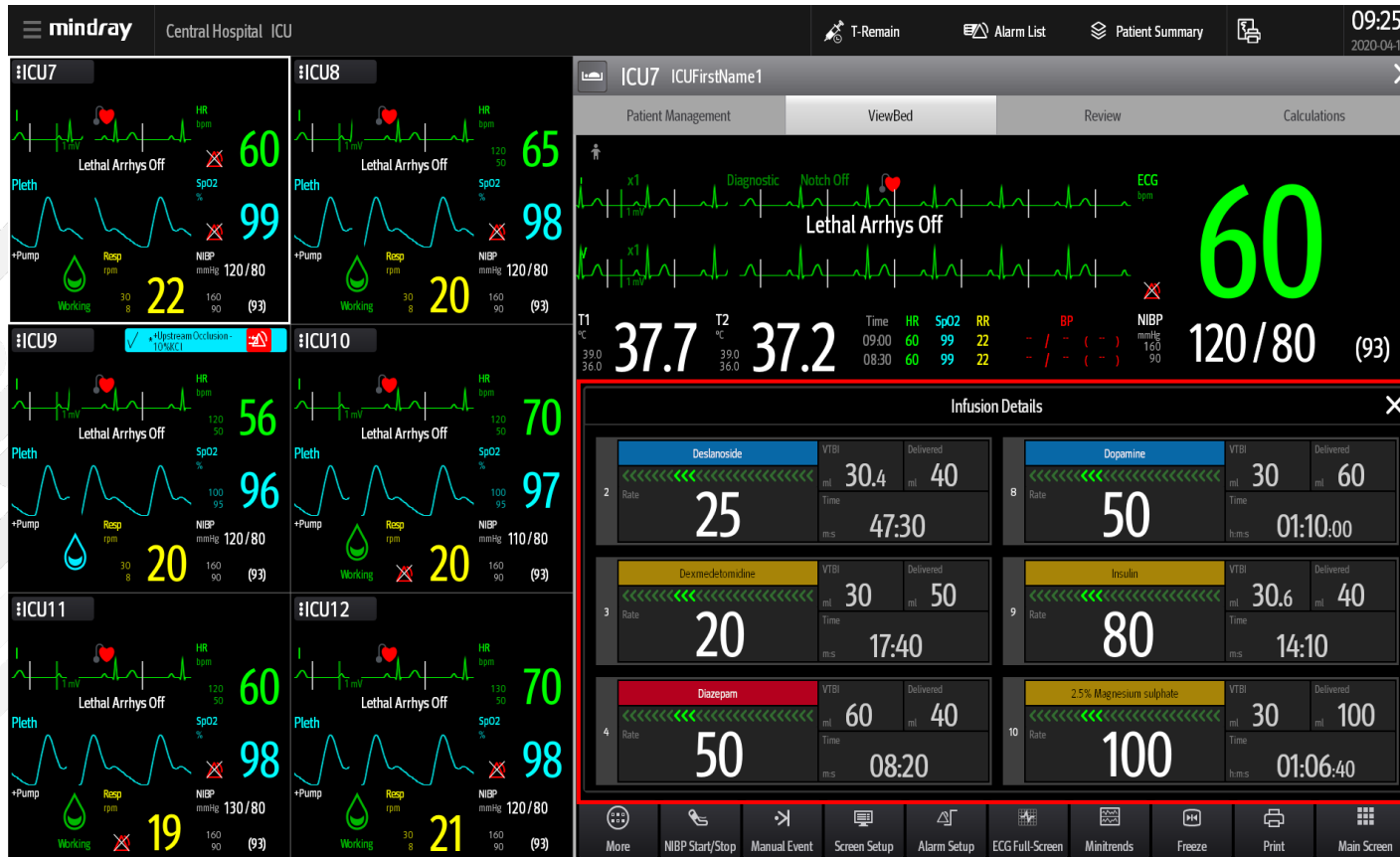
Centralized sound and light alarm to protect patient safety.

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Intuitive Interface, Clear at One Glance

Fusion Mode

ViewBed Screen



Real-time infusion details

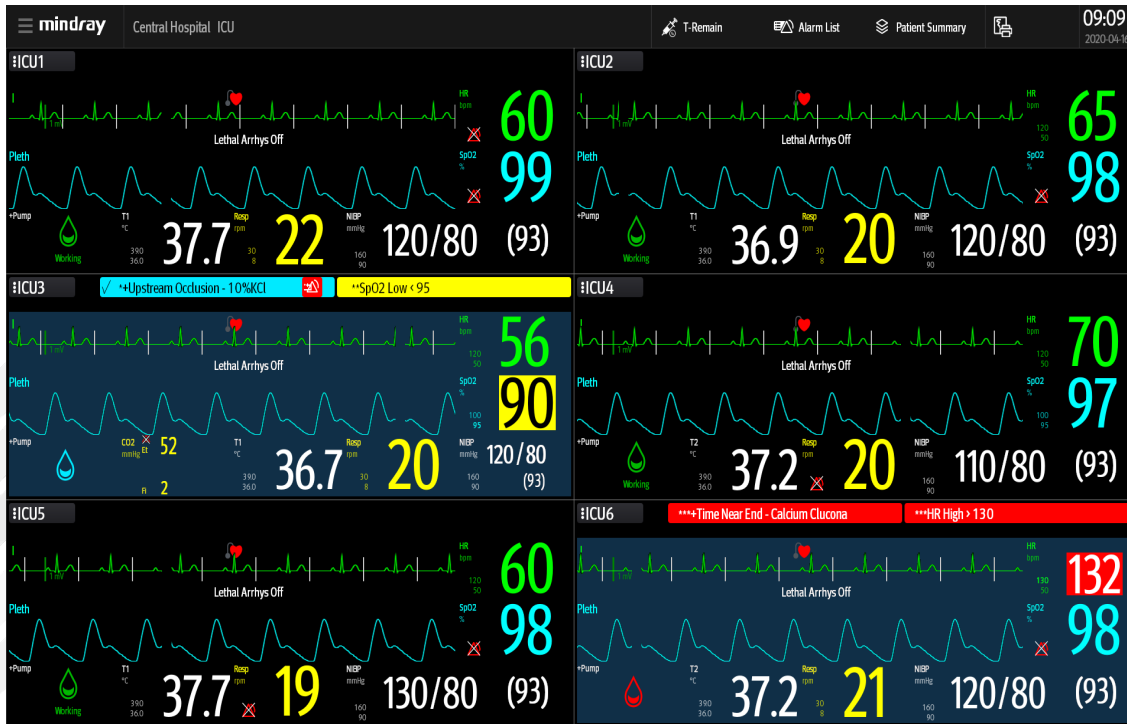
- Support up to 24 pumps(2 docking station M/S) for one bed
- Support up to 16 pumps(1 docking station) for one bed

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Intuitive Interface, Clear at One Glance

Independent Mode

Clear and flexible



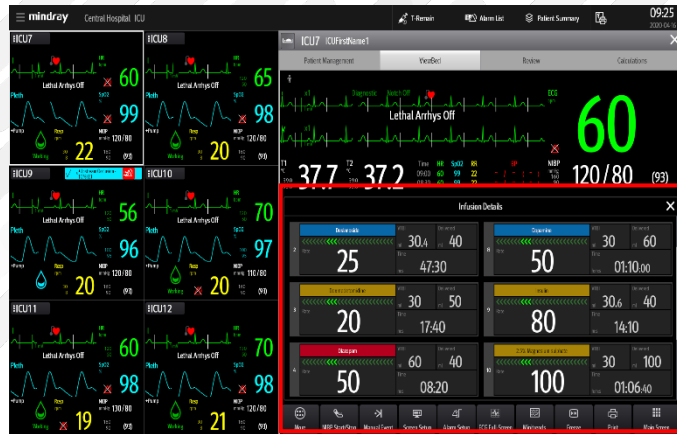
- For more than one display, up to 36 beds for one screen.
- Easily extend infusion information to different places like wall mounted large screen

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Drug Color Coding System



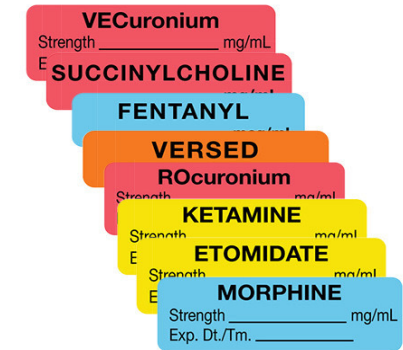
*Convenient information verification,
better medication safety.*



Infusion Details

Bed No	Drug Name	T-Remain(≤20min)
01-2	Calcium Clucona	02:20
02-6	Digoxin	04:40
02-6	Diazepam	08:20
02-4	10%KCl	08:56
02-5	10%KCl	09:08
01-1	10%KCl	10:05
02-6	Insulin	14:10
02-6	Dexmedetomidine	17:40

Remaining Infusion Time



- Classify drugs by different colors to quickly identify high-alert drugs.
- Keep consistent with the bedside infusion pumps.

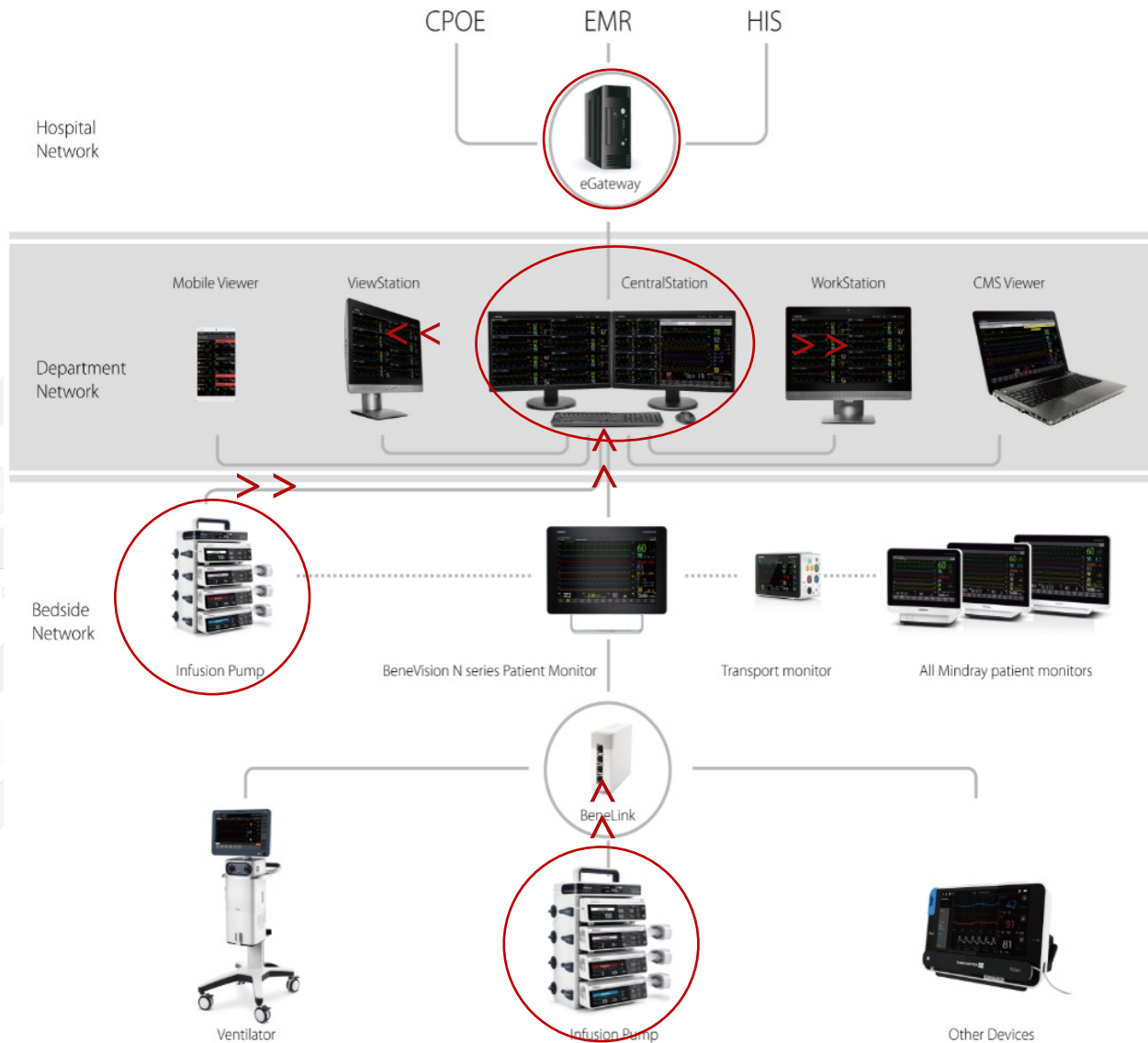
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02



System Connectivity

System Architecture

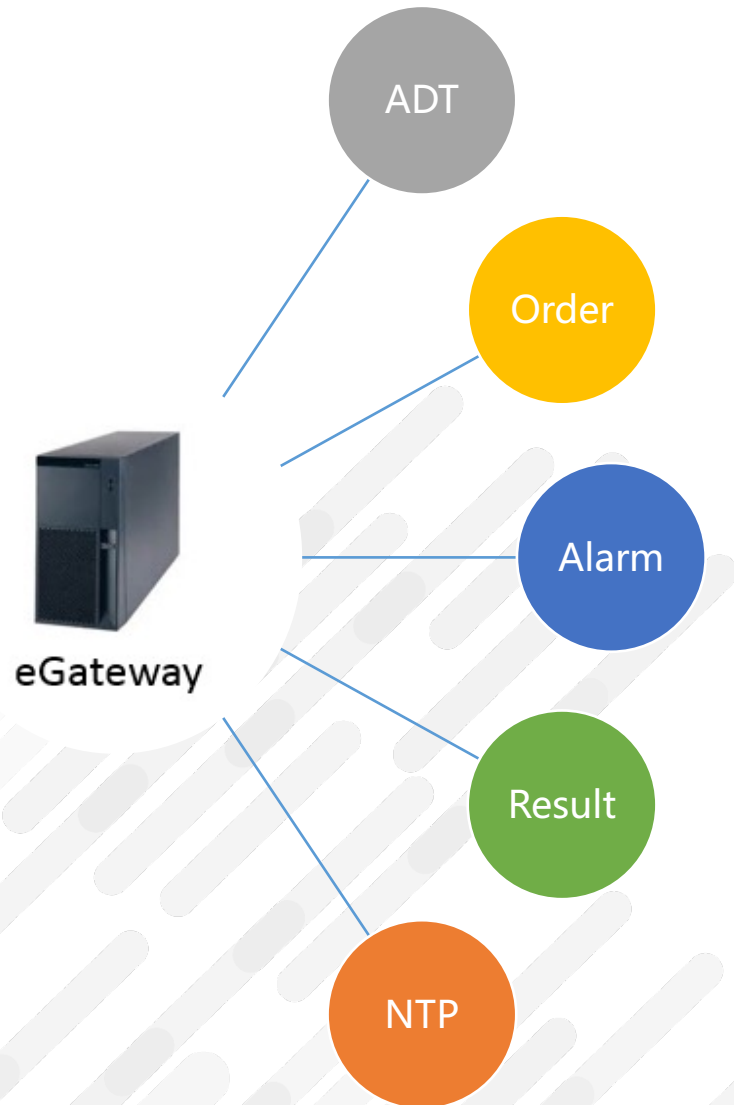


Access to hospital networks with enhanced IT solutions

- Infusion pumps connect with CMS directly or through BeneLink.
- Through BeneVision CMS, infusion information can be extended to the whole monitoring network
- With the IHE HL7 interface, infusion pumps can be connected with CPOE to get prescriptions and send the infusion result to HIS/EMR.

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Safe medication

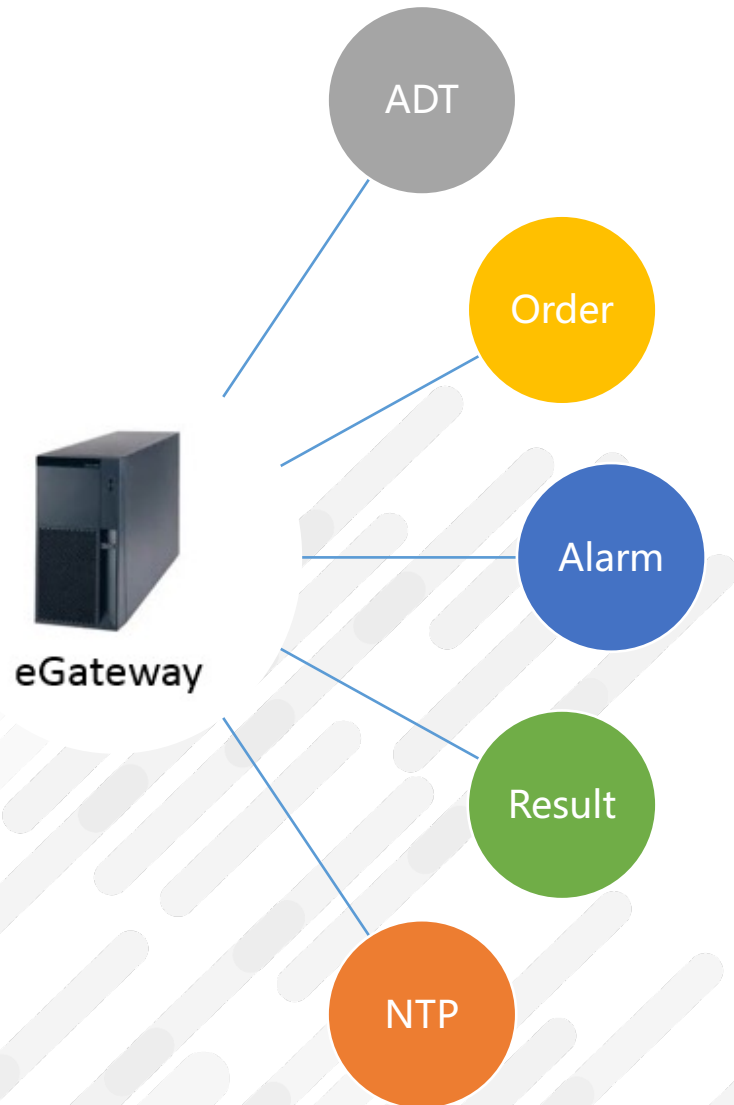
Superior Data Connection Solution



eGateway is the bridge between hospital information systems and Mindray patient monitoring system.

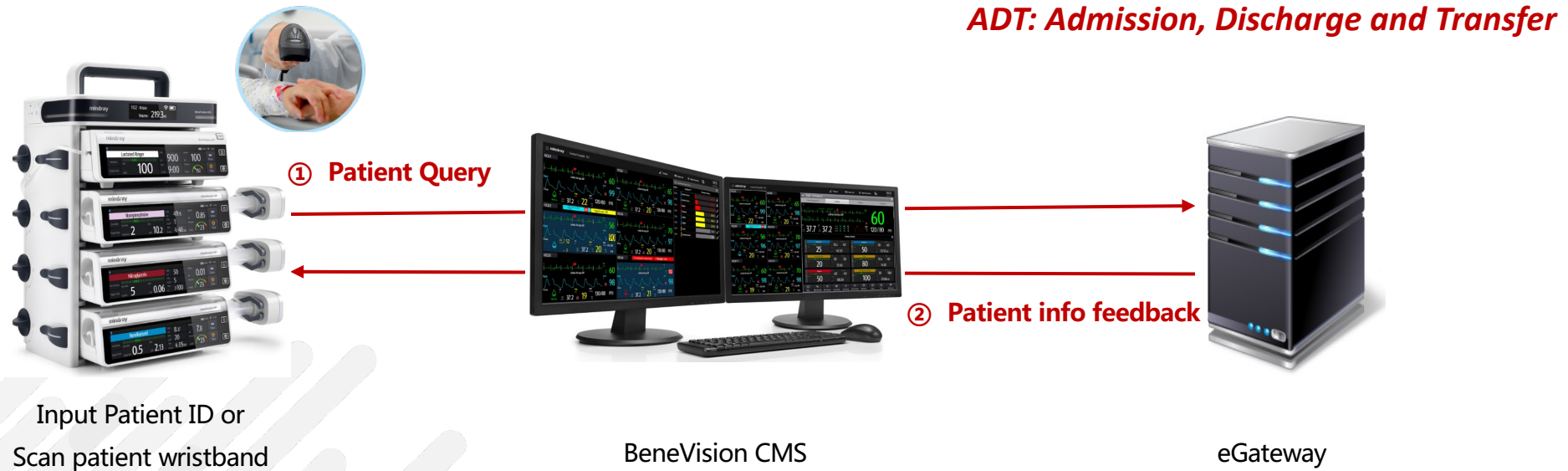
- Standard IHE HL7 protocol, making it easier to connect with information systems.
- Compatible with all Mindray patient monitors, BeneFusion nSP/nVP/nDS/nCS and BeneVision CMS.
- Up to 200 beds, unified protocol interface reduces development cost.

Superior Data Connection Solution



- ① **ADT:** Synchronize the patient information(Patient ID, name, DoB, Gender, etc)
- ② **Order:** CPOE distributes the prescription to the bedside pumps automatically, no need to input the drug name, dose, rate, etc
- ③ **Alarm:** Medication process monitoring and real-time alarms sending to alarm systems
- ④ **Result:** Medication process and results send to the EMR to fulfill the patient's medical record.

Efficient Patient Management –ADT



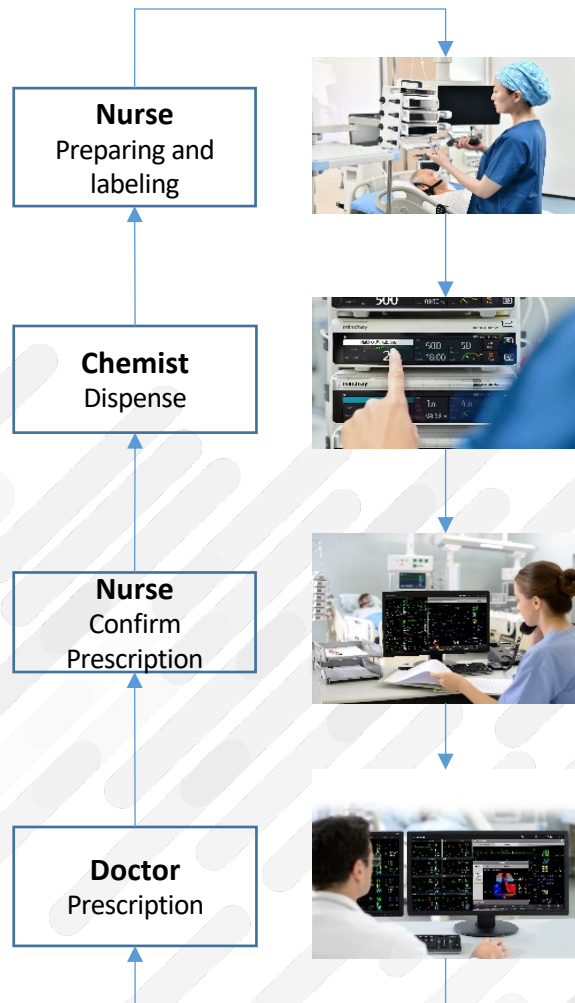
One time to complete multi device patient synchronization.

➤ **Multi-path patient adminssion for infusion pump:**

- eGateway -> Pump(Docking)
- eGateway -> Monitor -> BeneLink -> Pump(Docking)
- eGateway -> CMS -> Pump(Docking and single pump)
- eGateway -> CMS -> Monitor -> BeneLink -> Pump(Docking)
- eGateway -> CMS(Pairing) -> Monitor and Pump(Docking and single pump)

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Closed-loop Medication Management



Information Check: Scan the patient and medicine barcode or QR code to quickly confirms the match between the patient and the drug automatically.

Prescription Execution: Caregivers start to execute the prescription distributed from CPOE without extra manual settings.

Real-time Monitoring: Medication process monitoring and timely response to alarms. Adjust the medication plan if needed.

Medication Feedback: With the standard IHE HL7 interface, real time medication information can automatically feedback to EMR/HIS and fulfill the closed-loop medication management.

Centralized Drug Library Management



SafeDose DERS Library

- **DERS:** Dose error reduction system, keep the drug parameters in a safe range and reduce the medication errors..

SafeDose Information Library

- Drug library without DERS.

Brand Library

- Uniformly calibrated brand consumables to ensures the accuracy and consistency of clinical medication.

Note:

- Available for pump docking stations connected with CMS directly or through BeneLink.
- Not available for single pump connected with CMS through Wi-Fi network.

03



System Deployment

System Deployment

Display mode setup

System Setup

Display Alarm Patient Management

Parameter Color

Screen Size

Screen

Auto Close ViewBed Screen Never ▶

Sector

Patient Sector Number customize ▶

Patient Window

Monitor Screen

Other

Column 2 ▶

Row 8 ▶

Pump Screen

Enable Pump Screen Display ☒

Column 3 ▶

Row 6 ▶

Pump Screen Number 1 ▶

Pump Screen Position 2 ▶

Note: please make sure that there are more pump sectors than monitor sectors; otherwise, pump screen might not display certain pumps

- **Fusion mode**
 - ✓ Infusion information is fused to the monitoring sector
- **Independent mode**
 - ✓ Number of screens must be greater than 1
 - ✓ Set and display infusion information on a single screen

System Deployment

Case 1: Infusion pump fixed to a bed.

System Setup

Patient Management | **Device Management** | Review | Telemetry

Device Assignment

Auto Admit Device

Bed List

Display1 Identify

1. Select the target sector

2. Select the target infusion pump

Device Name	Departm.	Room No	Bed No	
Dock_003	ICU	05	12	+
Dock_003	ICU	Room1	13	+
Dock_003	ICU	Room1	14	+
Dock_003	ICU	Room1	15	+
Dock_003	ICU	Room1	16	+
Dock_01	ICU	01	1	-
Pump_002	ICU	02	6	-
Dock_003	ICU	01	2	-
Pump_001	ICU	01	3	-
Pump_001	ICU	02	4	-
Pump_001	ICU	02	5	-
Pump_001	ICU	03	7	-
Dock_003	ICU	03	8	-
Dock_003	ICU	04	9	-

- System Setup->Device Management->Device Assignment

- Set the Department and Bed No. on infusion pump.
- Assign the pump on CMS->Device Management.
- Once the patient is discharged, the device still occupies the sector, and don't need to admit the device again.

System Deployment

Case 2: Flexible use of infusion pump.

The screenshot displays the Mindray Central Hospital ICU interface. On the left, a grid of 12 sectors is shown, each with a status icon (green drop for 'Working', red drop for 'Occlusion', blue drop for 'Time Near End Calcium'). Sectors 01-1, 01-2, 02-4, 02-5, 02-6, 04-10, and 05-11 are 'Working'. Sectors 03-7 and 03-8 show 'Occlusion'. Sector 04-9 shows 'Time Near End Calcium'. Sectors 01-3, 02-7, 03-9, 04-11, and 05-12 are empty, marked with a '+' sign. A red box highlights sector 04-11, with the instruction '1. Select the target sector' below it.

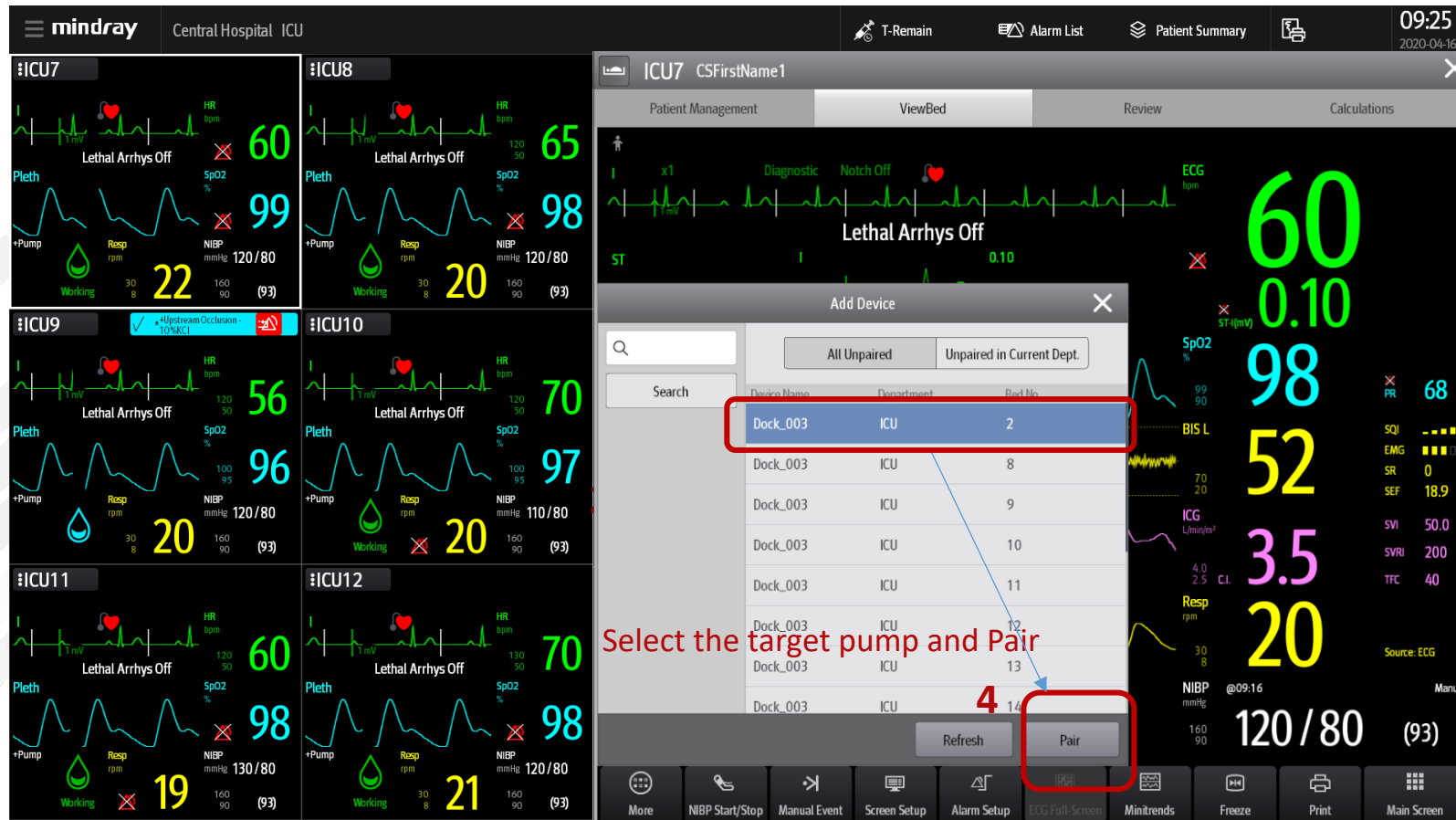
On the right, the 'Device Assignment' table lists available infusion pumps. A red box highlights the first row, with the instruction '2. Select the target infusion pump' above it. A blue arrow points from the '+' icon in sector 04-11 to the '+' icon in the first row of the table.

Device Name	Department	Room No	Bed No	
Dock_003	ICU	05	12	+
Dock_003	ICU	Room1	13	+
Dock_003	ICU	Room1	14	+
Dock_003	ICU	Room1	15	+
Dock_003	ICU	Room1	16	+
Dock_01	ICU	01	1	-
Pump_002	ICU	02	6	-
Dock_003	ICU	01	2	-
Pump_001	ICU	01	3	-
Pump_001	ICU	02	4	-
Pump_001	ICU	02	5	-
Pump_001	ICU	03	7	-
Dock_003	ICU	03	8	-
Dock_003	ICU	04	9	-
Dock_003	ICU	04	10	-

- Set the Department and Bed No. on infusion pump
- Assign the pump to the target sector
- Once the patient is discharged, the sector becomes idle and you need to admit the pump again.

System Deployment

Case 3: Bind infusion pumps with patient monitor.



- Step1: Admit patient monitor to CMS.
- Step2: Bind infusion pump(single pump or docking station) with patient monitor on CMS.



System Deployment

Drug library management

Process

1. Collect drug information of the department

2. Edit the drug library with SafeDose DERS tool and export the drug library file

3. Synchronize the drug library to infusion pumps through BeneVision CMS.

System Deployment

Drug library management

Tool: SafeDose DERS

- New drug library (DERS)
- New drug information library(without DERS)

The screenshot displays the 'Master Server Setup (Administrator)' window. The 'Pump Device Management' tab is active. On the left, there are two sidebar options: 'Drug Library Update' and 'Brand Library Update'. The main area features a search bar with the placeholder text 'Please enter search criteria.' and a refresh icon. Below the search bar is a table with the following columns: an unchecked checkbox, 'Department', 'Drug Library Name', 'Type', 'Time', and two buttons: 'Synchronize To Device' and 'Device List'. The first row of the table contains a checked checkbox, 'ICU', 'Demolib', 'Drug Library', '2020-05-12 20:', and the two buttons. At the bottom of the window, there are four buttons: 'Select All' (with an unchecked checkbox), 'Add Drug Library', 'Delete Drug Library', and 'Operation Log'. The 'Add Drug Library' button is highlighted with a red box.

	Department	Drug Library Name	Type	Time		
<input checked="" type="checkbox"/>	ICU	Demolib	Drug Library	2020-05-12 20:	Synchronize To Device	Device List

Note: SafeDose DERS tool is license controlled.

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04



Specification & Order



Specification

Features		BeneVision CMS	BeneFusion nCS
Device Supported		Patient monitors BeneFusion nSP/nVP/nDS	BeneFusion nSP/nVP/nDS
Software	Number of Beds	64/128 beds	36/72 beds
	Infusion Review	Yes	No
	WS/VS/CMSViewer	Yes	No
	Standalone MobileServer	Yes	No
	Standalone eGateway	Yes	Yes
	Integrated MobileServer	Yes	No
	Integrated eGateway	Yes	Yes
	Virtualization/Redundancy	Yes	No



Specification

Why BeneVision CMS is recommended?

1. Customer Interest:

- Centralized vital signs monitoring has been widely used and integrated central station can better attract our customers.

2. Investment protection:

- Price advantage and investment protection. Functions (support monitor and infusion pump) can be configured as required and upgraded at any time.

3. Fusion features:

- More complete and comprehensive data for better clinical decisions and patient safety.
- Better scalability and extend to WorkStation/ViewStation/CMSViewer/MobileViewer for real-time data sharing.
- Better space management for nurse station.

When BeneFusion nCS is recommended?

Customer or tender requirement

Specification

Features	Pump connect with CMS directly	Pump connect with CMS through BeneLink
Does CMS need a license?	Yes	No
How to bind patient monitor with infusion pump?	Pairing on central station	No need
What type of monitor supports binding with infusion pump?	All patient monitors	Only N series
Can infusion information display on monitor?	No	Yes
Other differences?	<ul style="list-style-type: none">• Remaining Infusion Time table• Independent screen for infusion information• Only Mindray BeneFusion nDS/nVP/nSP	<ul style="list-style-type: none">• InfusionView (Both CMS & monitor)• Available for other brands (No InfusionView)• Integrated Devices screen
How to choose the solution?	<ul style="list-style-type: none">• Customer budget	<ul style="list-style-type: none">• High level of informatization, focusing on multi-device data collection.• Customer is interest in Mindray patient monitor.
	<ul style="list-style-type: none">• Don't focus on the differences. CMS is for the medication safety, BeneLink is used to solve the problem of multi-device information island. Both CMS and BeneLink are important part of the IT solutions.	

How to Place an Order?

BeneVision CMS

300CB-CTO-S01	Property Values	Recommend
Main Unit Type	CentralStation WorkStation ViewStation CentralStation server (128 beds) Cluster CentralStation WorkStation Lite	CentralStation
Support Devices	Patient Monitor Infusion Pump Patient Monitor + Infusion Pump	Infusion Pump
Beds	64/128	64
Bed Number of WorkStation	8 beds of WS 16 beds of WS 32 beds of WS 64 beds of WS /	/
Main Unit	PC hardware PC hardware With RAID High Performance PC Mini PC 1U PC /	/

300CB-CTO-S01	Property Values	Recommend
Display	1 24" Display(with 1 adapter) 2 24" Display(with 2adapter) 3 24" Display(with 3 adapter) 1 23" Touchable Display 2 23" Touchable Display 3 23" Touchable Display /	/
Dongle	USB Dongle Software License	Software License
Support WS/VS Connect	Support WS/VS Connect /	/
Integrated MobileServer	Integrated MobileServer /	/
Integrated eGateway	ADT+Result+Report+Alarm+Order /	/
Integrated MLDAP	LDAP connection (2000 users) 100 MLDAP local users	100 MLDAP local users
CMS Viewer Review	CMS Viewer Review /	/
24h ECG Summary	24h ECG Summary /	/
ABPM	Support NIBP analysis /	/

Under development, not finalized.

on
ation

How to Place an Order?

Standalone eGateway

310AB-CTO-S01	Property Values	Recommend
Product type	Normal eGateway Cluster eGateway	Normal eGateway
PC Hardware	PC Hardware /	/
Display	1 Displayer /	/
Dongle	USB Dongle Software License	Software License
Number of Beds	Support 1 Bed Support 64 Beds Support 200 Beds	Support 200 Beds
Support Ultrasound	Support Ultrasound /	/
Support ADT	Support ADT /	Support ADT

310AB-CTO-S01	Property Values	Recommend
Support Results	Support Results /	Support Results
Support Alarm	Support Alarm /	Support Alarm
Support Docsharing	Support Docsharing /	/
High Resolution Waveform	High Resolution Waveform /	/
Doctor Order Synchronization	Doctor Order Synchronization /	Doctor Order Synchronization
History Data Forward	History Data Forward /	/
Operating System	Windows OS /	/
Antivirus Software	McAfee Solidcore /	/



Super Central Monitoring System with Best Experience

Smart fusion, Safe medication

Smart fusion
Safe medication



THANKS !

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