



## PATIENT SAFETY



## Patient Safety is Our Top Priority

The SIGMA Spectrum Generation 2 Infusion System has redefined smart pump technology by making patient safety a top priority with features that go beyond Generation 1 Dose Error Reduction Software (DERS) to support the goal of reducing potential medication administration errors.

- The safety systems in SIGMA Spectrum's Generation 2 technology offer multiple opportunities to intercept potential infusion related errors, and guide clinicians toward safe practices.
  - **Single Step Titration Error Prevention** helps to intercept dose rate errors for each single titration step.
  - **Check Flow at Start of Infusion** helps to ensure the flow of critical medications.
  - **Secondary Infusion Container Check** reduces the potential for concurrent flow and helps to ensure the secondary and primary containers are flowing at their intended rates.
- The smart system design allows for frequent Master Drug Library (MDL) updates to be rapidly transferred to the pumps and provides Continuous Quality Improvement (CQI) reporting features that identify pump data and events for CQI team analysis.
- The rapid, intuitive workflow and the standard set technology of the SIGMA Spectrum make it easy for clinicians to load the pump, quickly program an infusion and guide them in averting potential administration errors.

### Generation 2 Error Prevention Features

- Single step titration error prevention system
- Check flow at start of infusion
- Secondary infusion container check

### Smart System Support

- Consultative MDL development support and guidance
- IT resources assist in implementation of server, wireless pump connectivity, and integration with HIS
- Go-live and post installation support staff training

### Smart Architecture

- Bi-directional wireless communication
- Fast and reliable MDL updates
- CQI reporting
- HL7 and XML interfaces

### Rapid, Intuitive Workflow

- Rapid priming of standard IV administration sets
- Quick drug search within library
- "ON" to "Run" in 25 seconds
- On-board digital help screens

### Standard Set Technology

- Uses Baxter's standard IV administration sets
- Ease of priming
- Ease of set-up
- Drives set standardization and efficient use of inventory
- Reduction in total cost of ownership



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## MEDICATION ERROR PREVENTION SYSTEMS



### SIGMA Spectrum Infusion System Committed to Helping Reduce Medication Errors

Medication administration errors are costly and can result in patient harm. To effectively protect the patient, smart infusion pump technology helps intercept the potential harm associated with errors in dose programming and calculations. The SIGMA Spectrum Infusion System incorporates **Dose Error Reduction Software** (DERS) plus additional, unique Generation 2 safety features that are designed to guide users toward safe practices and help to reduce pump programming errors.

Enhancing patient safety requires the commitment of everyone from clinicians to hospital administrators. To ensure medication error reduction is a top priority, clinicians need to establish best practices and use equipment that helps them meet their medication error reduction goals. The smart technology of the SIGMA Spectrum Infusion System can help accomplish these goals with:

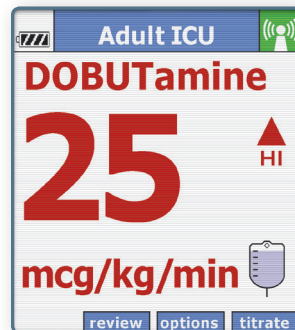
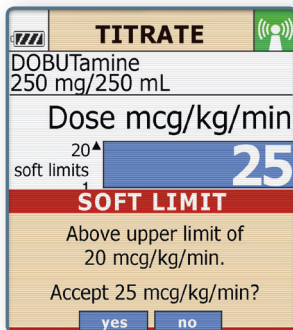
- Multiple error prevention systems focused on enhancing patient safety
- Rapid, intuitive workflow that supports error prevention with consideration to the clinician's challenging environment and needs
- Expert support before, during, and after implementation



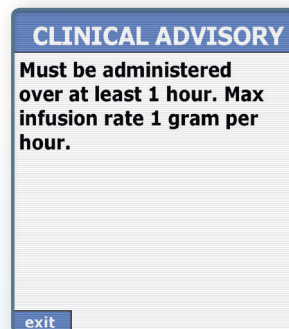
*The SIGMA Spectrum's smart design brings multiple safety features directly into the hands of the people who play a critical role in creating a safer environment for patients.*

SIGMA Spectrum's Generation 1 **Dose Error Reduction Software** (DERS) can help reduce pump programming errors by incorporating:

- Hard and soft limits
- Multiple drug dose modes
- Starting dose rates and concentrations, each customized in the SIGMA Spectrum **Master Drug Library** (MDL)



The SIGMA Spectrum Infusion System allows the clinician to better manage patient safety with the customization of the **MDL** and **Clinical Advisories**. The **MDL** allows your institution to develop a robust library of drugs and fluids to meet your hospital's medication therapy needs for each specific care area.



Facility-established **Clinical Advisories** can be created to provide important clinical tips and notifications while programming the pump.

Each step of the customization, from initial development of the **MDL** and **Clinical Advisories** to utilizing **Continuous Quality Improvement** (CQI) reporting, can help your hospital team adhere to established best practices.



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## SIGMA Spectrum Generation 2 is Redefining Smart

The SIGMA Spectrum Infusion System is redefining smart pump technology by taking the important safety features of Generation 1 technology and incorporating three additional safety systems to further protect the patient from harm.

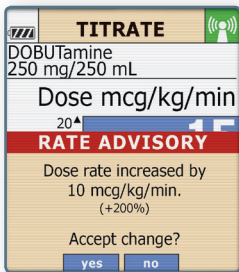
**The Generation 2 safety system goes beyond DERS** by bringing three additional error prevention features to the point of care:

- Single Step Titration Error Prevention
- Check Flow at Start of Infusion
- Secondary Container Check

These error prevention systems are designed to help reduce infusion errors that may still occur when using DERS.

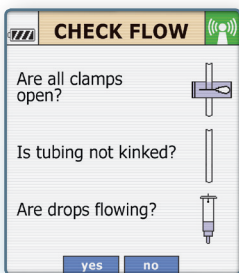
Safety Features	Gen 1	Gen 2
DERS	✓	✓
Customized MDL	✓	✓
Wireless Updates	✓	✓
CQI Information	✓	✓
Single Step Titration Error Prevention		✓
Check Flow at Start of Infusion		✓
Secondary Infusion Container Check		✓

## Generation 2 Error Prevention Features



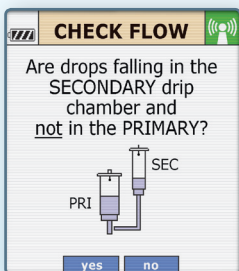
**Single Step Titration Error Prevention System** alerts the clinician of potentially harmful, single step titration errors.

- Each hospital's MDL can be programmed with limits for the percent rate change that is considered safe for each single titration step.
- A Rate Advisory will alert the clinician if the dose rate has been programmed to exceed the facility's pre-configured limit.



**Check Flow at Start of Infusion** prompts the clinician to check for a clamp inadvertently left closed during a low flow rate infusion.

- The Check Flow prompts the clinician at the start of the infusion to ensure that there are no closed clamps or kinks in the tubing that might prevent the flow of critical medications.



**Secondary Infusion Container Check** prompts the clinician to check for potentially harmful errors when initiating a secondary infusion.

- By prompting the clinician to verify medication flow from the secondary container and not the primary, the potential for unintended concurrent flow is reduced.
- Helps ensure the secondary and primary bags run at their intended flow rates.

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RAPID, INTUITIVE WORKFLOW



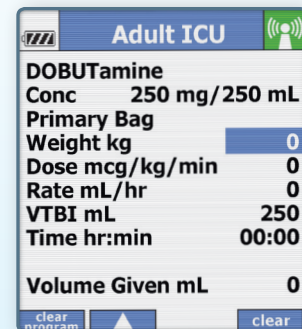
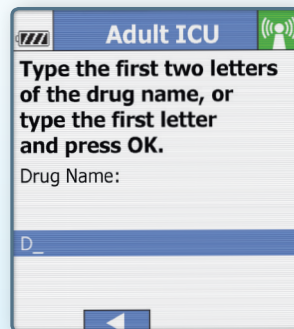
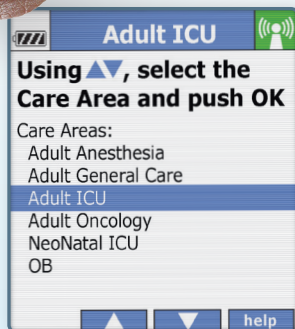
## SIGMA Spectrum Infusion System Rapid, Intuitive Workflow

The SIGMA Spectrum Infusion System has been designed to place multiple error prevention systems at the point of care with consideration for the clinician's environment and workflow needs.

**SIGMA Spectrum's smart pump design** facilitates easy training of staff, may help reduce set-up time and waste, and supports the efficient use of assets.

- **Easy, fast priming of Baxter's standard IV administration sets.**
- **Rapid, programming workflow** minimizes set-up and infusion start time. Programming can be completed from "On" to "Run" in 25 seconds.
- **Quick drug search within library.**
- **On-board digital help screens and prompts** assist in rapid, easy set-up, programming and troubleshooting.
- **Bright color screen** is easy to read for quick assessment of infusion status and information.
- **Lightweight, compact pump profile** enhances patient mobility and saves space.

RAPID, INTUITIVE  
WORKFLOW



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## WIRELESS CONNECTIVITY



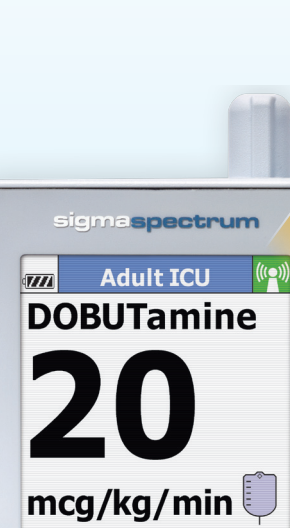
## SIGMA Spectrum Offers Smart Architecture to Enhance Communications

The smart architecture and the robust communication capabilities of the SIGMA Spectrum Infusion System create seamless, wireless connectivity between pumps and the SIGMA Gateway Server.

- **Multiple server architecture** provides redundancy and load balancing for reliable and fast MDL updates.
- **Parallel communications capabilities** ensure that the latest MDL data will be transferred quickly to the pump fleet even if some of the pumps are turned off or are not connected to the network.
- **No interruption of infusions** while the server updates the pump MDL. In-use pumps will store and queue the new MDL for automatic loading after completion of the current infusion.
- **Bi-directional wireless communication** allows for frequent Master Drug Library (MDL) updates to be pushed to the pump and enables pump data to be aggregated by the SIGMA Gateway server.
- **Continuous Quality Improvement (CQI) reporting** provides data about pumps and infusions via the CQI reports. The SIGMA Gateway Server aggregates pump and infusion data across the entire fleet on regular intervals and populates the CQI reports.
  - **CQI analysis of events** by departments provides data that the hospital can use to establish best practices.
- **HL7 and XML communications** extends the reach of the SIGMA Spectrum Infusion System into hospital Clinical Information Systems (CIS).

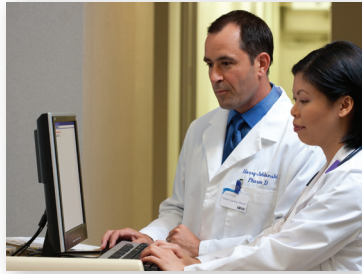


*If connectivity between the pump and the SIGMA Gateway Server is lost, the pump will store data in its non-volatile memory and send data to the server when it reconnects. This is essential to maintain data integrity within the system.*



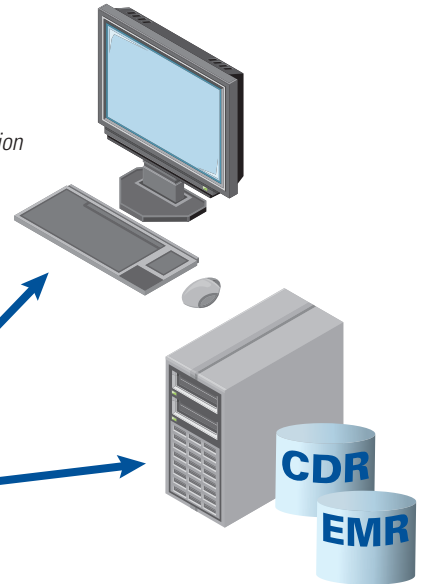
# Wireless MDL Publishing and CQI Reporting

## PHARMACY

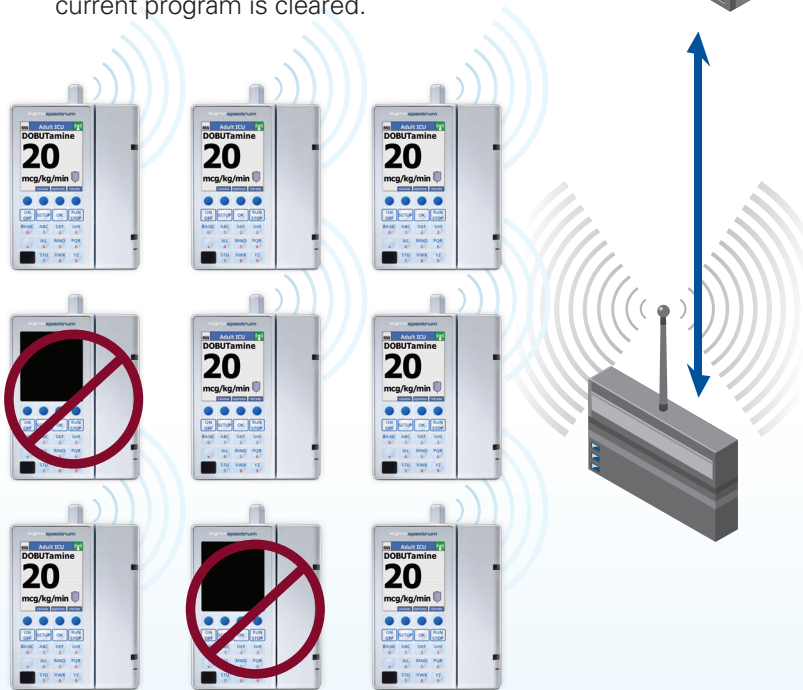


### WEB INTERFACE

CQI Reports are accessed via Web interface application



1. Pharmacist loads MDL onto gateway server via Web interface.
2. Server sends new MDL to all connected pumps. If a pump is being programmed or running an infusion, the new MDL is loaded and "queued" on the pump and will be made active when the current program is cleared.



3. If a pump is off-line, the system will skip that pump in its update sequence and continue on with other pumps that are online. This greatly increases the speed of updating the entire fleet of pumps vs. waiting for each off-line pump to be connected to the network before proceeding.
4. MDL version is checked each time the pump connects to server and updated if necessary.
5. CQI data is sent back to the gateway and stored for later access via Web interface.

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## IMPLEMENTATION SUPPORT



## The Baxter Implementation Team Provides the Right Technologies and Expertise for Successful System Integration

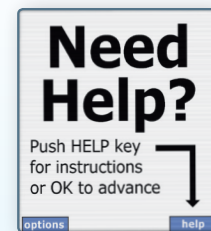
The Baxter team will provide the clinical and technical expertise and consultative guidance to facilitate the successful integration of the SIGMA Spectrum Infusion System. Working with a customer project lead (Spectrum Pump Administrator), the Baxter team will develop a project plan based on best demonstrated practices and help create processes within your organization to maximize the safe and compliant use of the system:

- **Complete Go-Live Support.** Baxter will provide processes, tools and the necessary staff resources to ensure a smooth transition to the SIGMA Spectrum Infusion System. Proven project management principles and techniques will be employed to make the conversion process a positive experience.
- **Pharmacy Support** for comprehensive Master Drug Library (MDL) development. The experienced Baxter team of nurse and pharmacist consultants provides guidance and MDL best practices support as your facility completes the development of your customized MDL.
- **IT Support** to assist in the implementation of the SIGMA Gateway Server, wireless pump connectivity and integration into the hospital IT environment. Working with the hospital IT and Biomed resources, the Baxter team will plan, test and validate the Spectrum wireless connectivity. The SIGMA Spectrum Infusion System easily integrates into your facility network without burdensome technology interruptions.
- **Clinical Support** with the goal of 100% staff training. Clinicians in your facility will receive hands-on training from skilled clinical trainers. In addition, Super Users will be identified and trained to be able to provide on-going training and support throughout the implementation.

The goal is to ensure comprehensive, consistent training of clinicians who will utilize the pumps.

- **Post-Installation Technical Support** provides equipment support and field upgrades.

**You can rely on SIGMA Spectrum Infusion System smart pump technology and the entire portfolio of Baxter Healthcare's products and services to help contribute to high levels of patient safety.**



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## TOTAL COST OF OWNERSHIP



## Total Cost of Ownership

- **Baxter's standard IV administration set usage can be cost-effective and can enhance efficiency through reduced complexity.**
- Utilizing Baxter's standard IV administration sets can drive standardization and support efficient use of inventory.

**Can yield up to 39% cost savings in IV tubing sets and up to 50% reduction in IV tubing set inventory.**

- SIGMA Spectrum's single channel, compact design allows for multiple configurations to optimize utilization of your facility's pump fleet.
- The SIGMA Spectrum Infusion System is designed with safety and ease-of-use in mind. The intuitive, smart design of the pump helps save set-up and training time that contributes to cost efficient use of resources.

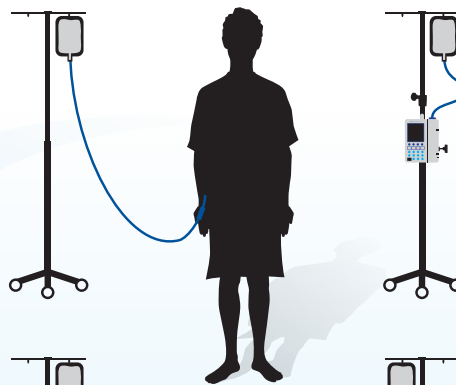
### Reduced Training Time

- **Ease of set-up with Baxter's standard IV administration sets**
- **Bright, highly visible, easy-to-read screen**
- **Clear on-screen prompts and digital help screens**
- **"ON" to "RUN" in 25 seconds**

Your Baxter representative will work with you to develop a purchase analysis and determine your total cost savings over the life cycle of the SIGMA pumps in your facility.

#### Emergency Department

#### Medical/Surgical



Baxter offers a standard IV administration set that moves with the patient between clinical care areas.

Intensive Care

Operating Room

## Standard IV Administration Set System



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