

- 1 Institute of Medicine. *Preventing Medication Errors: Quality Chasm Series*. Washington D.C., July 2006.
- 2 Bates, D., Spell, N., Cullen, D., Burdick, E. et al. The costs of adverse drug events in hospitalized patients. *JAMA*, 1997, 277(4):307-311.
- 3 Based on internal analysis of aggregate CQI Alaris System data from 300 hospitals, 2010.
- 4 D.W. Bates, communication, October 2001.
- 5 St. Joe's Candler, Danello, S., Maddox, R. et. al. Intravenous infusion safety technology: return on investments. *Hospital Pharmacy*, 2009, 4(8):680-687, 696.
- 6 Medical Equipment Report for Smart Pumps - Syringe: CareFusion Alaris Syringe Module Was Rated the Category Leader in the June 2010 Top 20 Best in KLAS Awards. KLAS Enterprises, 2010. Retrieved from: <http://www.KLASresearch.com>.
- 7 Food and Drug Administration. *MaxPlus Tru-Swab Positive Displacement Connector*, September 25, 2007.

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CareFusion  
San Diego, CA

[carefusion.com](http://carefusion.com)





Infusion products



Together, the Alaris® System and our portfolio of IV sets and accessories help improve patient safety and reduce costs through the prevention of medication errors.



## The risk of medication errors during infusion therapy is one hospitals cannot afford.

Fortunately, many medication errors are preventable. That is why CareFusion is focused on helping hospitals reduce these errors. We provide market-leading infusion products that help improve the quality, safety and costs of the care you provide.

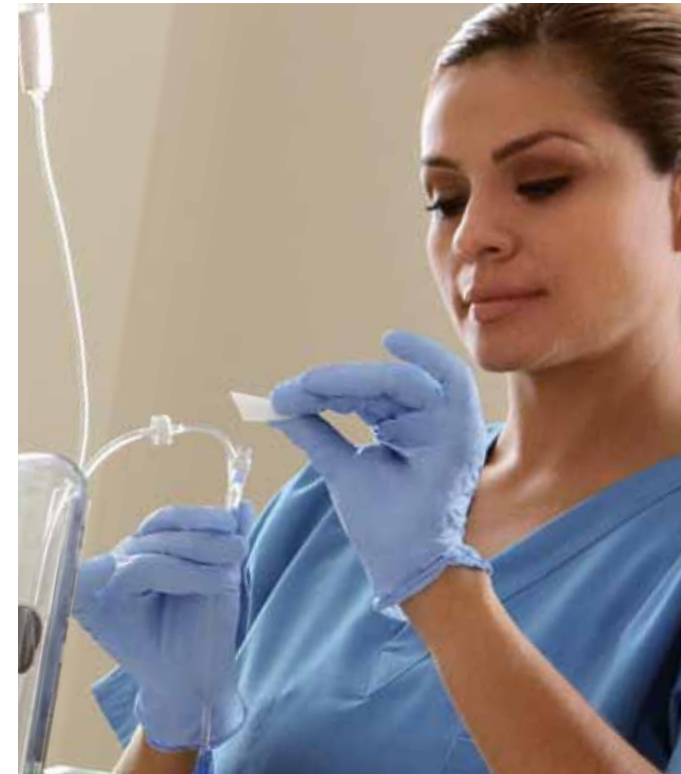
### Medication errors

- 1.5 million patients annually experience a medication error,<sup>1</sup> costing \$8,750 per PADE<sup>2</sup>
- Alaris CQI aggregate data shows that at least one harmful infusion error is averted every 1.8 days with Guardrails<sup>®</sup> Suite MX software<sup>3</sup>

**Solutions to help protect every infusion.**

**Actionable data to improve practices and processes.**

**IV sets and accessories to reinforce best practices.**



## Solutions to help protect every infusion.

61% of the most costly and serious medication errors are IV-related.<sup>4</sup>

The Alaris System with Guardrails Suite MX software is a smart IV medication safety system that can help protect every infusion to guard you and your patients from medication errors.

### Unique multi-modality and modular design

The Alaris System combines a single point-of-care unit featuring Guardrails Suite MX safety software with large volume pump, PCA, respiratory monitoring (SpO<sub>2</sub> and EtCO<sub>2</sub>), syringe and barcoding capabilities to help protect every type of infusion.

### The only system available today to protect dose and duration, including intermittent infusions

Guardrails Suite MX software is the only dose-error reduction software (DERS) available today that offers two safety software limits for intermittent infusions—total dose and duration. This software can help safeguard continuous and intermittent infusions.



***“We achieved an ROI of \$1,866,973 and averted 471 preventable ADEs using the Alaris System with Guardrails Suite MX software.”<sup>5</sup>***

St. Joseph's/Candler, Savannah, GA

## The power of one standardized system.

Improve safety and reduce costs with one system that streamlines workflow and wirelessly manages and transfers infusion data.



### One system for clinicians:

- Streamlines workflow, enabling daily training and use through standardization
- Simplifies IV delivery, programming and management, and saves time through integration
- Helps improve Guardrails software compliance for hospitals and care areas through modularity
- Helps standardize processes, consolidating all IV sets and accessories

### One system for pharmacy:

- Simplifies data set library use, development and management
- Enhances quality improvement across systems, and helps manage risk and safety through Alaris integration
- Improves workflow, consolidating parts for biomed engineers to service

### One system for IT:

- Enables virtual deployment supported by evolving IT environments, and helps improve implementation time, reduce recovery time and reduce costs
- Streamlines CQI data collection and data set deployment, reducing risk
- Simplifies wireless communication card and interface use and management

## One infusion platform with multiple modalities for all care areas.

The Alaris System is a multi-modality system that can help protect every infusion type and every patient, across all care areas.



### Alaris Pump module

#### Help protect every infusion, every time

The only large volume pump available today that can help protect every infusion type, including continuous and intermittent deliveries, the Alaris Pump module is designed for the delivery of fluids, medications and blood products for adult, pediatric and neonatal patients.

### Alaris Syringe module

#### Enjoy the #1 "Smart Syringe Pump," per KLAS®

The Alaris Syringe module has a unique pressure-sensing disc that shortens the time to alarm, accurately monitors in-line pressure, reduces delays upon infusion startup and decreases inadvertent bolus following occlusion release.

### Alaris Auto-ID module

#### Approach bedside barcoding with scalability

The Alaris Auto-ID module enables barcoding for all pump, syringe and PCA infusions. This unique technology offers additional protection at the point of care by ensuring the right medication is administered to the right patient.



## Alaris PCA module

### Comprehensively support pain management

The Alaris System is the only smart pump that offers PCA delivery and continuous respiratory monitoring on one platform. Providing interoperability and communication among these modules, the unique PCA pause protocol feature pauses the PCA infusion. This capability deactivates the patient dose button and continuous infusion when the hospital-set respiratory and/or oxygen-saturation rate alarm limits are exceeded.



## Alaris SpO<sub>2</sub> module

### Monitor pulse oximetry for all IV infusions

The Alaris SpO<sub>2</sub> module helps continuously, noninvasively monitor oxygen saturation and pulse rates in adult, pediatric and neonatal patients. The Alaris SpO<sub>2</sub> module may be integrated with either Masimo® Signal Extraction Technology (SET®) or Nellcor™ pulse oximetry with OxiMax™ technology.



## Alaris EtCO<sub>2</sub> module

### Continuously monitor EtCO<sub>2</sub> in all patient areas

The Alaris EtCO<sub>2</sub> module is an easy-to-use capnograph that displays waveforms and numeric values of EtCO<sub>2</sub>, FiCO<sub>2</sub>, respiratory rate and no-breath indication. It uses Orion Microstream® technology with Filterline disposables to offer real-time respiratory status with intubated or non-intubated patients.



## Actionable data to improve practices and processes.

CareFusion CQI aggregate data shows that at least one harmful infusion error is averted every 1.8 days with Guardrails Suite MX software.<sup>3</sup>

Overwhelmed with raw data, hospitals need ways to effectively use this data to reduce the risk of patient harm and improve clinical practices. The Alaris System captures infusion data for continuous quality improvement (CQI) in the patient care process.

### CQI data allows you to:

- Identify an out-of-limit alert or programming change to identify disparities between practice and policy
- Track near-misses that could have resulted in adverse drug events (ADEs), and use this information to educate personnel
- Identify process improvement opportunities to drive clinical best practices
- Demonstrate compliance with national safety standards for using smart pump technology

By transforming your infusion data into actionable intelligence, you can make measurable improvements, help prevent errors and guide future care.



***“I didn’t think the CQI data would be so powerful. The first time we presented the data spreadsheets, jaws dropped—‘My god, if that had gotten through.’<sup>5</sup> Now, we can see what we always knew was there. CQI is the pearl of the oyster.”***

Judy Hayes, Director of Professional Practice, Brigham and Women’s Hospital, Boston, MA

## Expert analysis of infusion data.

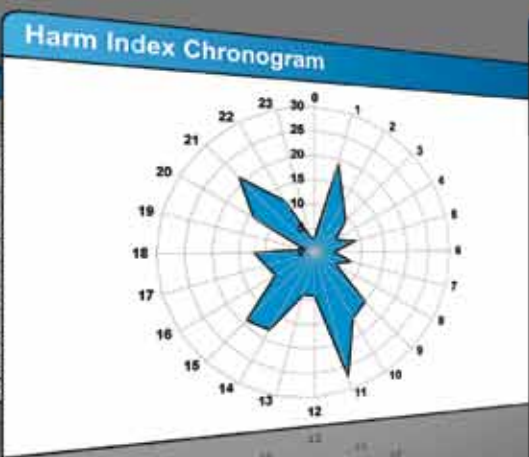
Our Infusion Analytics Service provides intuitive reports, so hospitals can analyze infusion activity and answer critical safety questions. This service helps you easily and measurably improve the overall quality of patient care. It also delivers insights without requiring additional technical or in-house staffing resources to manage and analyze data.



### Harm Index Overview Report

#### Top 10 Harm Index Drugs

Drug Name	Minimal	Moderate	Severe	Total
insulin drip	151	18	15	182
midazolam	0	4	9	13
potassium chloride	0	3	7	10
NORepinephrine	7	2	1	10
fentanyl	2	5	2	9
heparin	2	2	3	7
magnesium sulfate	0	0	6	6
lorazepam	1	3	2	6
propofol	3	1	0	3
EPIneprine	3	0	0	3
<b>Total</b>	<b>169</b>	<b>36</b>	<b>47</b>	<b>252</b>



### All Harm Index Detail

**Key Takeaways:**

- A total of 53 severe potential Preventable Adverse Drug Events (PADEs) were averted in the current period. 47 of these PADEs came from the top 10 drugs.
  - Evaluate Hospital Protocols to determine opportunities for improvement.
- The potentially harmful events occurred more frequently at 11 AM.
  - Evaluate nursing and pharmacy workflow to determine if opportunity areas exist.

## A wireless foundation that enables efficient and timely data transfer.

To make a smart pump decision today, you must determine how this technology fits into your hospital's future wireless and interoperability goals.

CareFusion is positioned to help you build the foundation you need to achieve your connectivity goals and improve patient safety. We have proven experience helping multiple large IDNs support all infusion monitoring devices and modalities on a single server. A strong, reliable wireless infrastructure ensures you efficiently access and transfer data, supporting your healthcare IT initiatives while improving safety and costs. The Alaris System provides the only true enterprise-grade, secure deployment architecture proven in hundreds of hospitals in the United States.



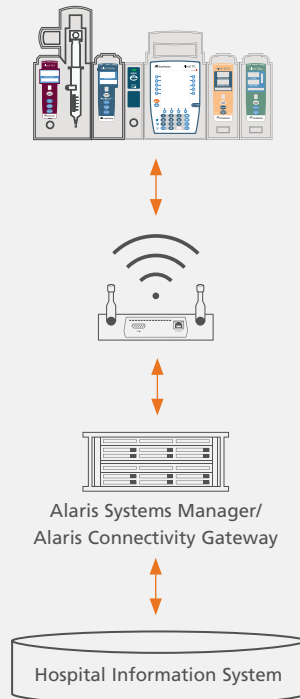
***Our reliable wireless infrastructure enables you to efficiently access and transfer data, supporting your healthcare IT initiatives while helping improve safety and costs.***

## The power of one wireless infusion system.

Improve safety and reduce costs with one system that helps streamline workflow and wirelessly manages and transfers infusion data.

### Alaris System

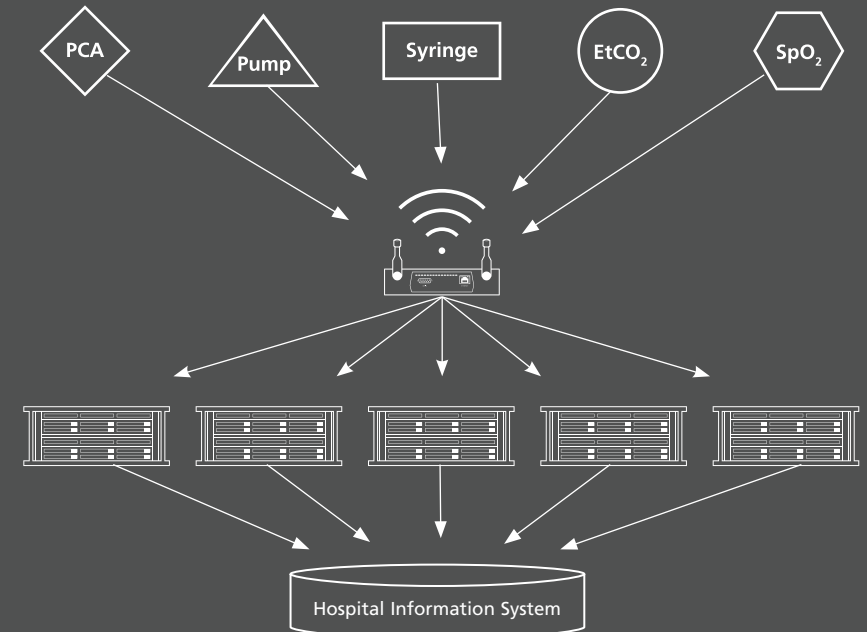
The Alaris System simplifies connectivity, saving you time and money



Alaris System description	# of items
Drug data sets	1
Education curriculum for staff	1
Set of parts for biomed	1
Power cords	1
CQI database	1

### Disparate infusion and monitoring devices

Disparate devices require more maintenance, additional servers and rack space, and increase network traffic and multiple interface expenses.



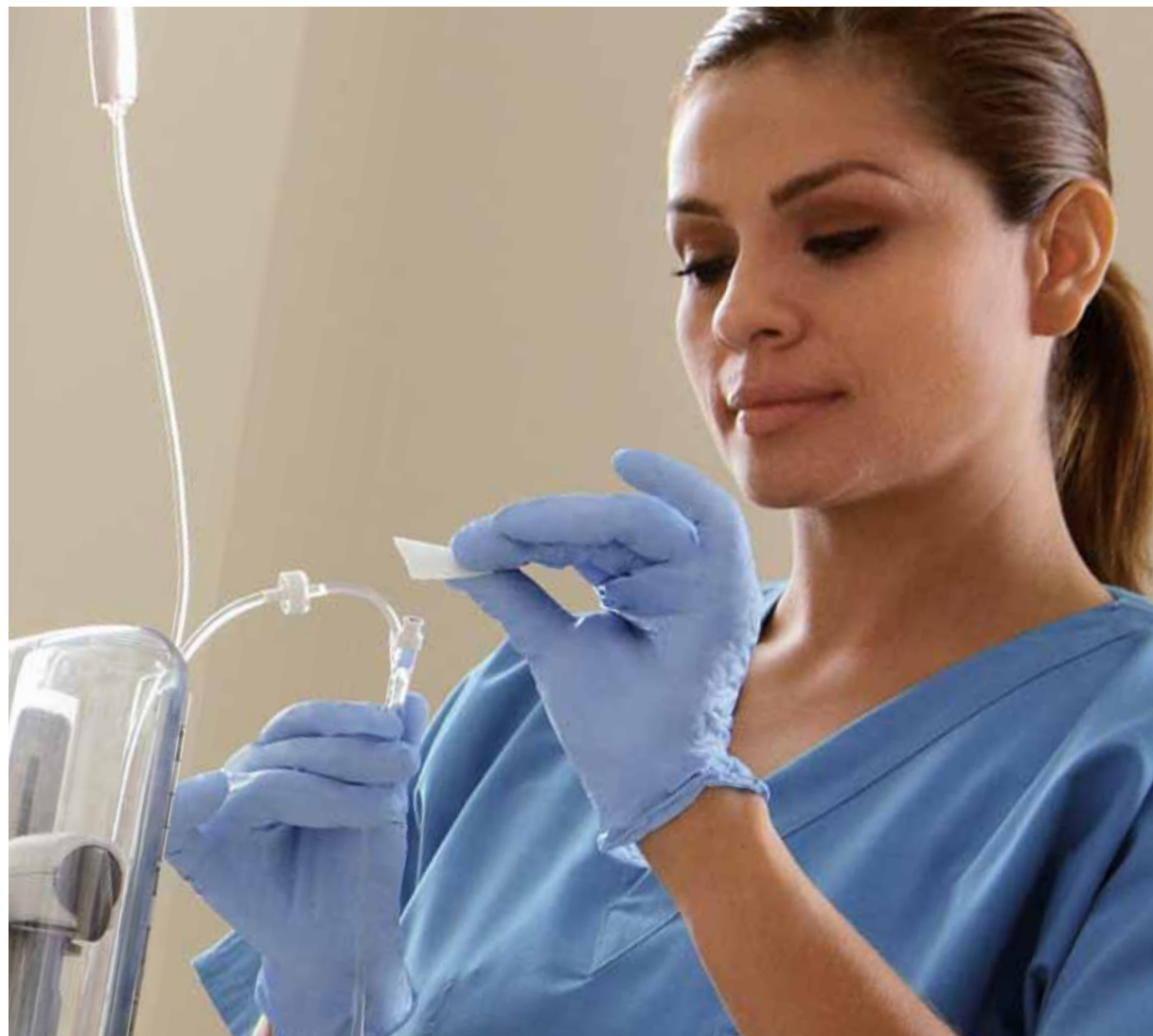
# of items	Disparate pump and monitoring devices description
3	Drug data sets
5	Education curricula for staff
5	Disparate sets of parts for biomed
5	Power cords
3	Disparate CQI databases; no combination

## IV sets and accessories to reinforce best practices.

### Innovative technology to reduce the risk of harm.

Caregivers need proven technology to help them reduce catheter occlusions, needlestick injuries and hazardous-drug exposure. Harm to patients and caregivers and the associated costs are risks hospitals cannot afford.

Helping address these risks, CareFusion offers a broad portfolio of IV sets and accessories. MaxGuard, SmartSite® and Texium® products better protect you, your patients and your bottom line.



*The MaxPlus® clear connector has clinically shown to reduce the occurrence of catheter occlusions when used with other clinical best practices.<sup>7</sup>*

## IV sets and accessories designed to promote best clinical practices.



### MaxGuard needleless IV connectors

The MaxPlus clear connector and MaxGuard antimicrobial connector:

- Help reduce occlusions when used with other best clinical practices
- Offer dual seal design that helps reduce microbial ingress when proper disinfection practices are performed
- Promote thorough best practices by design, including a more thorough flush
- Feature a simple open fluid path and clear housing, helping assess flush efficacy

### SmartSite needle-free valve and accessories

Through proven, award-winning needleless technology for clinician and patient safety, the SmartSite needle-free valve and accessories:

- Help prevent risk of bloodborne needlestick injuries
- Feature a smooth, swabbable surface designed to help disinfect every access point
- Feature technology standards with administration, gravity, secondary and extension sets

### Texium closed male luer

SmartSite needle-free valve products partner with our Texium closed male luer to form a closed system that:

- Features no-drip-tip technology
- Enables hazardous medications to be safely handled, to protect providers and patients
- Supports the entire continuum of drug administration care—drug mixing, preparation, transport, delivery and disposal

## World-class support and service.

The Alaris professional services support team offers an unparalleled implementation experience. We incorporate people and processes with evidence-based clinical best practices to help you successfully implement our infusion technologies. Our team consists of more than 100 project managers, nurses, pharmacists, field service engineers and network engineers who follow a defined and proven multidisciplinary process based on prior implementations.

After implementation, CareFusion can provide technical, clinical and repair support resources, ongoing support and education services, and data analysis assistance.

### **We offer multiple programs to help you fully benefit from your infusion technology investments and data:**

- Implementation support
- Integrated analytics services
- Optimization services
- CQI data consulting services



***“Everything the nurses thought that the Alaris System would be, it truly is. It’s not just a ‘bag full of promises.’ We haven’t just made a purchase—we’ve developed a partnership.”***

Judy Peterman, RN, Director of Critical Care Services, St. Joseph/Candler Health System



Proven technology.  
Measurable results.

That is what you  
can expect from Alaris  
infusion products.