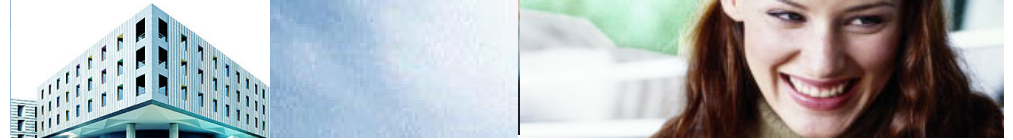




# **B. Braun Medical Inc. Company Overview**





## **B. Braun Group**

- 1839 - Founded in Melsungen, Germany
- \$3 Billion Global Healthcare Company
- Operations in over 50 Countries
- 29,000 Employees
- Family-Owned, 5th Generation of Braun Leadership
- History of Innovations & Leadership
- Safety & Environmental Culture
- 1976 - Acquired majority of Aesculap
- 1979 - Acquired Burrion Medical, Bethlehem, PA
- 1997 - Acquired McGaw, Irvine, CA





## **Four Divisions**

**Hospital  
Care**

**Aesculap**

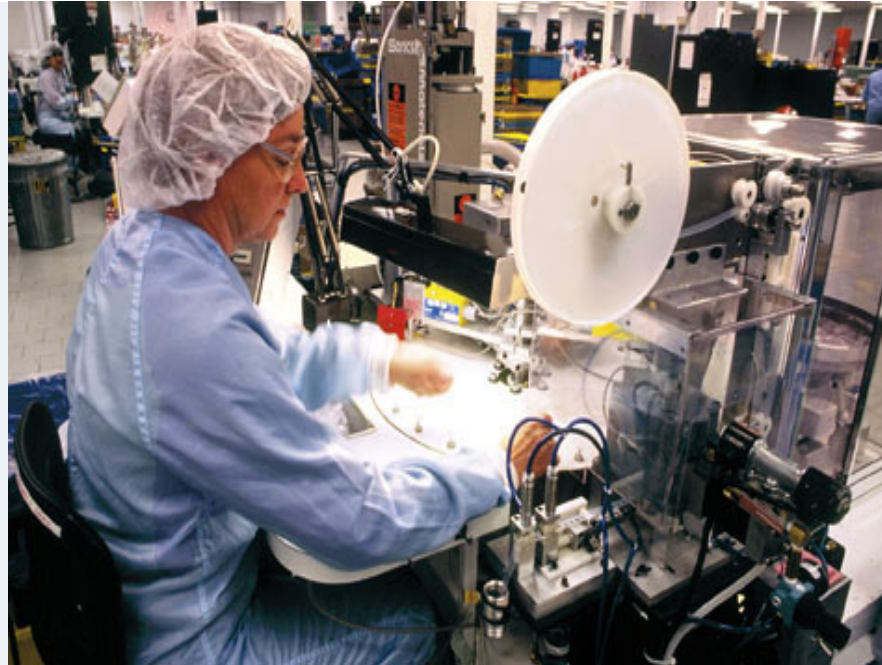
**Medtech**

**OPM**



## **U.S. Businesses**

- Hospital Care
- Aesculap Surgical
- Vascular
- OPM/Continuing Care
- Renal Therapy
- OEM / Industrial
- Central Admixture
- Pharmacy Services
- (CAPS)







## **Innovations...**

- IV Safety Infusion System barcode technology to reduce medication errors
- Passive needle-free IV system
- Positive pressure capless valve
- Capless IV system
- Non-PVC/DEHP-free IV bags in the U.S.
- Passive IV safety catheter
- Passive safety huber needle
- IV admixture outsourcing service, CAPS<sup>(R)</sup>
- Commercially prepared IV solution
- Piggyback system
- Parenteral nutrition solution
- Disease-specific nutrition solutions



## **Key Locations**

**Bethlehem, PA** - Headquarters & extrusion facility

**Center Valley, PA** - Aesculap headquarters

**Breiningsville, PA** - Warehouse

**Allentown, PA** - Needle-free products, IV Safety Catheters, Anesthesia Systems, Introducers, Pharmacy Admixture

**Cherry Hill, NJ** - Right Heart Catheters, Interventional Accessories

**Irvine, CA** - IV Solutions, Basic & Specialty Nutrition, Drug Delivery, BTC products, CAPS headquarters

**Carrollton, TX** - Infusion pumps

**Sabana Grande, Puerto Rico** - IV administration, IV and Irrigation sets



## **Center Of Expertise**

### **Allentown, PA**

Needle-free IV Systems

IV Safety catheter

Introducers

Regional Anesthesia Kits

Custom Kits

IV Anesthesia Systems

Pharmacy Admixture Devices





## **Center Of Expertise**

### **Irvine, CA**

IV Solutions

Basic & Specialty Nutrition

Drug Delivery

BTC

Non-PVC, DEHP-free

Central Admixture

Pharmacy Services  
(CAPS)







## **Center Of Expertise**

### **Dallas, TX**

Infusion Pump Systems

Medication Errors Reduction

Barcode Technology





## Outlook Safety Infusion System

- Designed to help reduce medication errors
- 54% of serious & life threatening medical errors associated with intravenous therapy
- Rights of IV medication safety
  - Right patient
  - Right drug
  - Right dose
  - Right route
  - Right time
  - Right documentation
- Barcode and wireless communications technologies





## Medication Errors: Point of Error

*48% of errors caught before reaching patient*

*2% of errors were caught before reaching patient*

### Ordering

### Transcribing

### Preparing

### Administering



**39%**

**12%**

**11%**

**38%**

Leape LL et al. Systems analysis of adverse drug events. JAMA 1995;274:35-43.



# The Facts!

Medication errors alone are estimated to account for 7,000 deaths annually

Adverse drug events (ADE's) cause more than 770,000 injuries and deaths annually

The misuse of infusion devices is responsible for up to 35% of all medication errors that result in significant harm... (Class 4 and 5)



# The ADE Impact!

Recent study found that 2 out of every 100 admissions experienced a ADE, resulting in increased hospital costs of \$4,700 per admission

JAMA. 277:307-311, 1997

Patients who suffer an ADE event remained in the hospital an average 8 to 12 days longer...costing \$16,000 to \$24,000

Agency for Health Research and Quality, 2001







## IMPACT INFORMATION

Adverse Drug events ( ADE's ) cause more than 770,000 injuries and deaths each year.

Agency for Health Research and Quality, 2001

These ADE's cost up to \$5.6 Million Dollars per Hospital.

Agency for Health Research and Quality , 2001

Medication Errors alone, account for more than 7,000 deaths annually.

Increase in US Medication-Error Deaths between 1983 and 1993. *The Lancet* , 350:643-44 , 1998

Patients who suffered from ADE's remained in the hospital 8 to 12 days longer and this stay cost the hospital \$ 16,000 to \$ 24,000 more than patients who did not experience ADE's.

Agency for Health Research and Quality , 2001

Manual programming of Infusion Devices accounts for 35% of all IV Medication Errors that result in significant harm ( Class 4 and 5 )

Preventable ADE's cost the Healthcare System \$2 Billion annually.



## **DIRECT IMPACT**

The Event (ADE) Itself

Extended Stay

Complimentary Services and Products

Staff Morale

Litigation Costs

Insurance Premiums

Institution Reputation

Personal Losses, Clinical, Patient, and Patient  
Family

Media Attention

Community Competitive Situations

Joint Commission Regulation Compliance



# The Bottom Line

Preventable Adverse Drug Events cost the healthcare system ***\$2 billion dollars*** annually

On average a 700 bed hospital will absorb \$2.8 million in excess costs ***caused by Adverse Drug Events***

Misuse of infusion devices will kill over 2,500 people this year and cause over 250,000 injuries



# The Leading Causes of Pump Errors

## Current Technology

- Over Engineering
  - Too many unused features
  - Engineered for competition
  - Not for nursing
- Complex to operate
  - Multi/single channel
  - Not standardized
    - Complex inservice
  - Inflexible platform
    - Does not address current workplace

## Clinical Environment

- Nursing
  - High degree of turnover
  - Increased use of temporary nursing companies
  - Increased responsibilities
    - More beds
    - More shifts
- Treatment pathway
  - Complex
  - Highly reactive to even minute changes



## Clinically Significant Events

- Adverse Drug Events
  - Medication errors
- Drug administration errors
  - Dosing errors
  - Dosing times

# CLINICAL RISKS

## Costs

- Prolonged hospital stays
- Legal Settlements
- Insurance
- Marketing
- Lost patient revenues
  - Average hospital losses 1-4% of patient revenue after adverse event



**B|BRAUN**

# Introducing the Solution!

## Outlook™ Safety Infusion System

Technologically Driven Clinical Solutions  
Winner of Breakthrough Technology Awards







# Outlook™ with Dose Scan™





## **Outlook™ IV Safety System**

The Outlook IV Safety System sets a new Standard of Care for Infusion Therapy Management.

The Outlook with DoseScan allows for automated infusion device programming. This is possible with the use of Barcoding for patient ID bracelet and the IV Medication container.

This process ensures the delivery of IV Medications to

***The Right Patient***

***The Right Drug***

***The Right Dose***

***The Right Rate***

***DoseScan is the only technology in the industry that provides this measure of safety for The Patient, The Clinician, and the Institution***

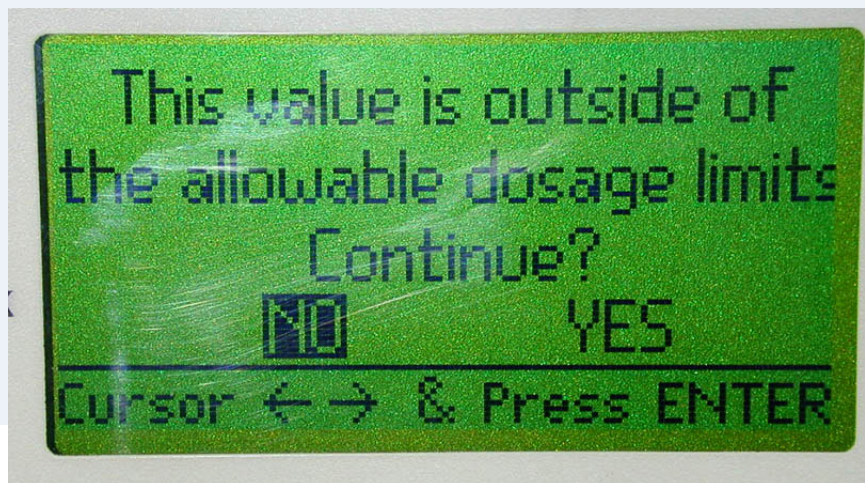
\*Patent Pending



## System Features/Benefits

### Dose Guard

This feature is designed as a secondary system to prevent errors caused by over or under infusion due to titration or incorrect programming.





## **Outlook™ 100: DoseGuard™**

The DoseGuard technology notifies the clinician when dose limits are exceeded.

- Dose limits can be assigned to any drug contained within the drug library
- Different dose limits can be assigned to the same drug in different categories. (e.g. Dopamine in ICU/CCU and Neo/Pedi)



## **DoseGuard™ Benefits**

Prevention of manual programming errors with dosed medications.

Prevention of titration errors especially with critical medications.

No hard limits, soft limits allow titration.

Improved patient care

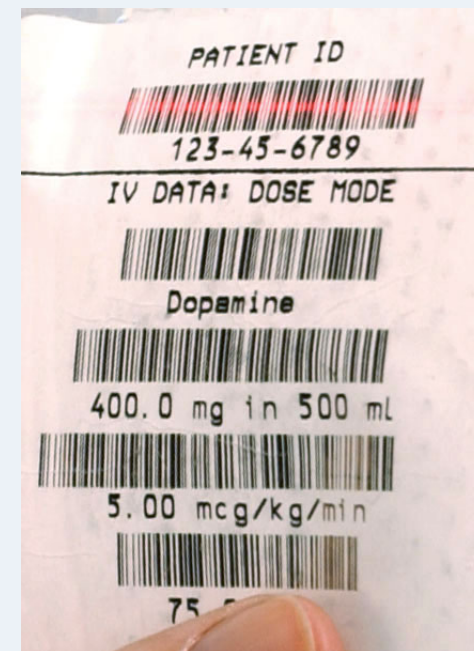




## Outlook™ 200: DoseScan™

The patented DoseScan technology uses barcode technology to automate the programming of the infusion devices.

Barcoding allows for utilization of the hospitals entire formulary





## **DoseScan™: Benefits**

Authorized User Identification

Patient Matching.

Automate programming of infusion data.

***Right Drug, Right Dose, Right Patient***



## **DoseScan™: Benefits**

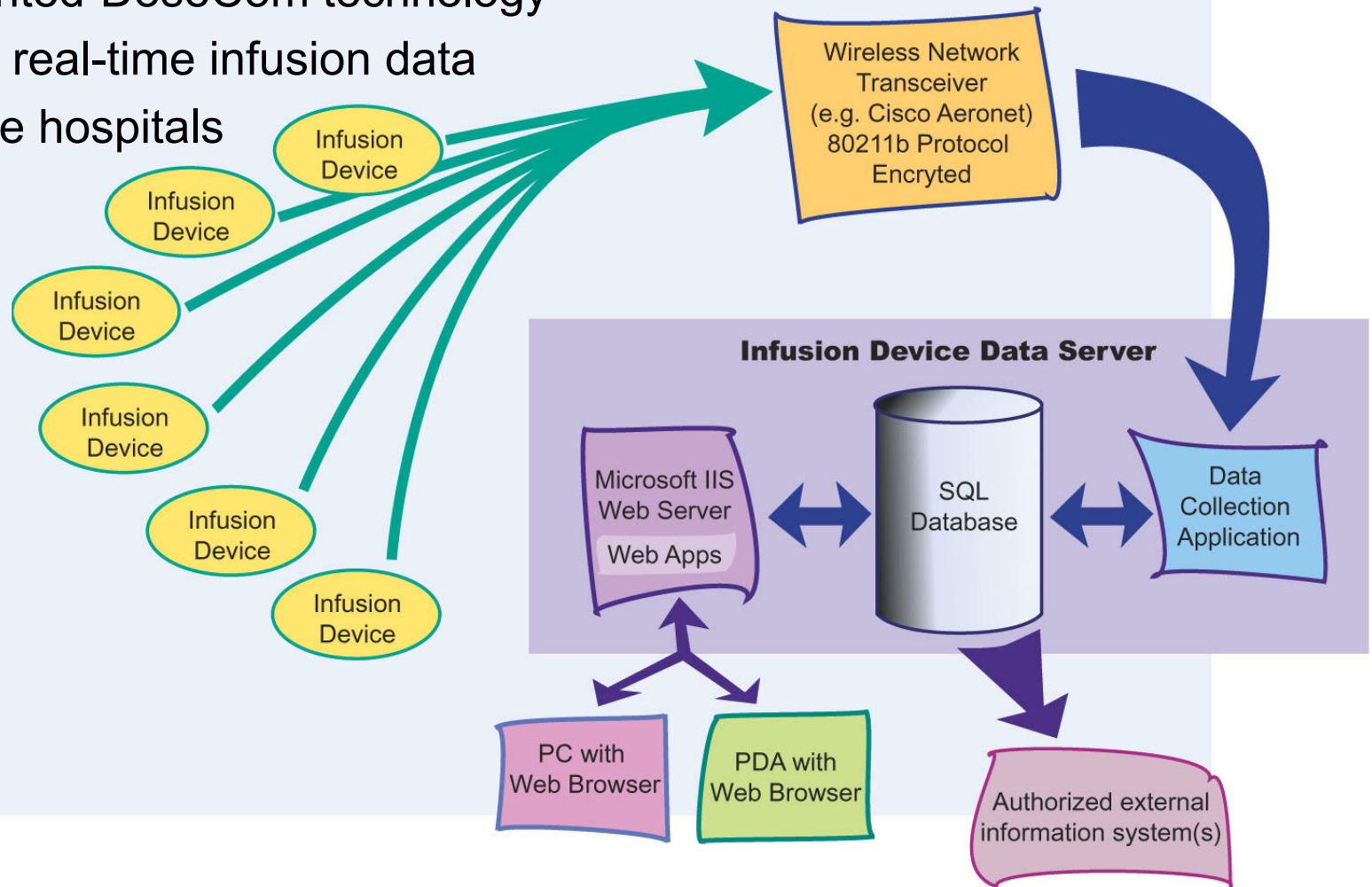
DoseScan becomes the primary safety system.

DoseGuard™ becomes a secondary safety system.



## Outlook™ 300: DoseCom™ I

The patented DoseCom technology transmits real-time infusion data across the hospitals existing wireless (RF) network.





## **DoseCom™ I: Benefits**

### **Nursing**

- Improved patient care and protection
- Remote alarm notification
- Remote monitoring of infusion status
- Automate charting to reduce paperwork

### **Pharmacy**

- Remote notification of “infusion almost complete” to eliminate *stat* dosing
- Monitor IV Drug Usage





## **DoseCom™ I: Benefits**

### **Risk Management/Safety Officer**

- Tool for assessing the effectiveness of safety initiatives.

### **Biomedical / Materials**

- Enhanced Asset Management
- PM notification based on total volume delivered.



## **Outlook™ 400: DoseCom™ II**

The patented DoseCom II technology allows the customer to use his existing bedside system to program the Outlook.

- Bridge Medical
- Pyxis Veri5
- Siemens, Cerner, etc.



## **DoseCom™ II: Benefits**

Instant update/access to electronic medication administration record (EMAR).

- Transmits only current orders.
- Prevents administration of deleted orders.



## **DoseCom™ II: Benefits**

DoseScan™ becomes the backup automated data entry system.

Open architecture allows the customer to choose the bedside system that meets their needs.

Provides audit trail for IV medication billing



## **System Features/Benefits**

### **IV bag barcode label printed in pharmacy**

Use existing pharmacy systems

- Enhances current system
- No change required to SOP
- No additional system costs

Utilize entire hospital formulary vs  
pump drug library



## **System Features/Benefits**

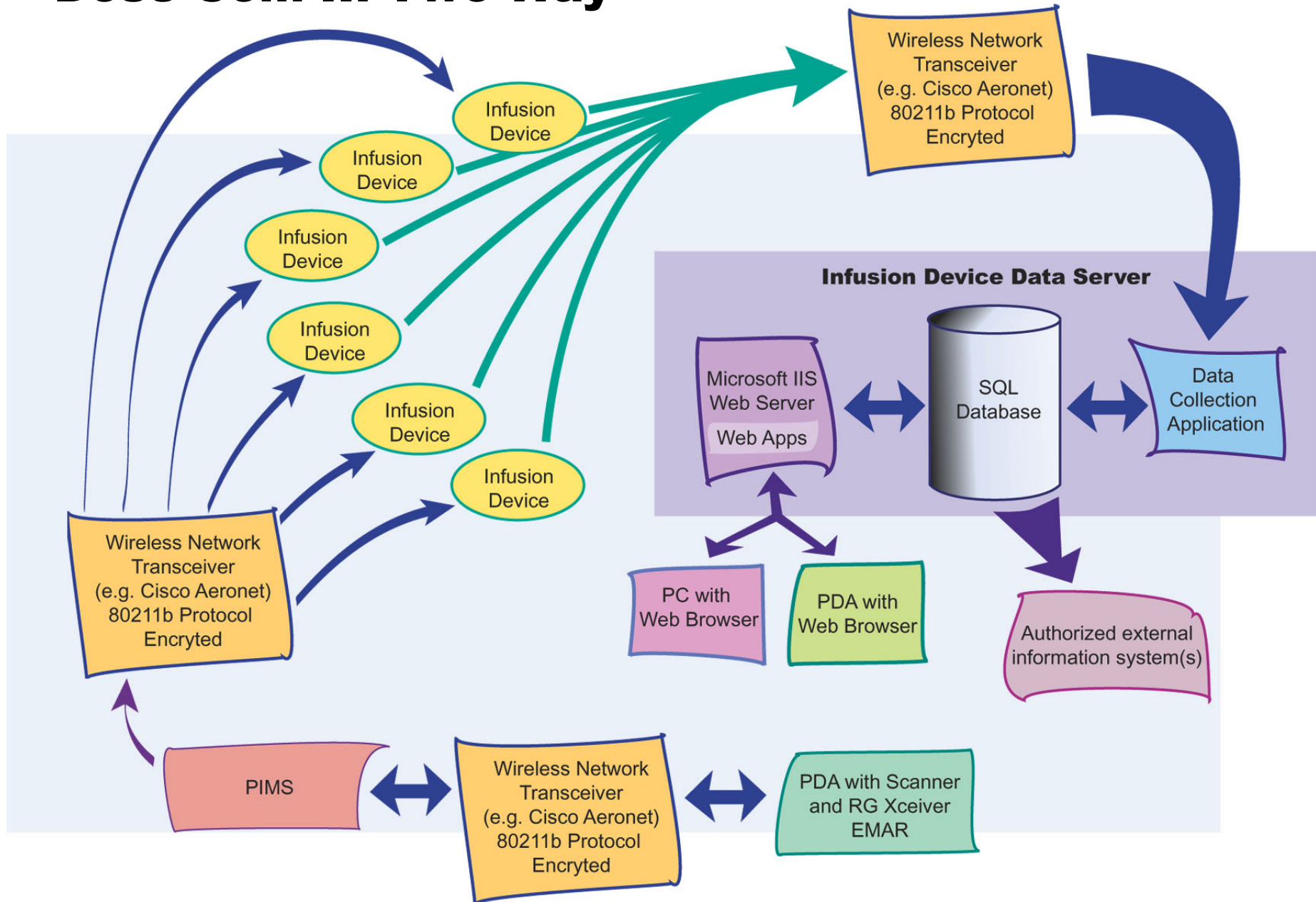
### **IV bag barcode label printed in pharmacy**

'Patient specific' information confirmed prior to labeling (e.g. allergies, compatibility, drug, dose, etc.)

Barcode compliments existing label -  
No change to existing systems or  
hospital protocol



# Dose Com II: Two Way





# Safety Technology Continuum

Entry At Any Level

**Outlook 100**



**DoseGuard™**

**Outlook 200**



**DoseGuard™**  
**DoseScan™**

**Outlook 300**



**DoseGuard™**  
**DoseScan™**  
**DoseCom™ I**

**Outlook 400**



**DoseGuard™**  
**DoseScan™**  
**DoseCom™ I**  
**DoseCom™ II**

Advancing along the Safety Technology Continuum





## Outlook™ Continuum: Summary

Model	DoseGuard	DoseScan	DoseCom I	DoseCom II
Horizon Nxt				
Outlook 100 Safety Infusion System	X			
Outlook 200 Safety Infusion System	X	X		
Outlook 300 Safety Infusion System	X	X	X	
Outlook 400 Safety Infusion System	X	X	X	X



## **System Features/Benefits**

**Scanning of Patient ID on  
IV medication bag**

Patient matching - 'right patient'

Eliminates major source of IV  
medication errors



## **System Features/Benefits**

### **Scanning of IV data**

Automated programming 'right' drug and 'right' dose

Eliminates major source of IV medication errors



## **System Features/Benefits**

**Bright LCD screen**

Better visibility from distance

No Tape Required!

- Drug name display for easy identification in multi-channel applications

Easier verification of infusion data





## **System Features/Benefits**

### **Flexibility**

#### **“Open Architecture”**

- Ability to interface with existing hospital systems
- Allows hospital to ‘choose’ other systems.



## **System Features/Benefits**

### **Expandable**

Ability to add future communication option(s).

- Protects against product obsolescence.

Two way RF communication ability with installed network.  
Real time.



## **System Features/Benefits**

**Laptop style battery  
compartment**

Ease in battery change

Eliminates pump re-certification  
time/cost



## **System Features/Benefits**

### **Human Factors Design**

Green - Forward in process

Red - Stop

Black - Input Functions



## **System Features/Benefits**

### **Modular System**

100% channel utilization

Stack five devices using  
one outlet - less cord clutter



## **Outlook™ Safety Infusion System**

The Outlook Safety Infusion System sets a new Standard of Care for the management of infusion therapy. The patented\* DoseScan™ technology allows the clinician to automate the programming of the infusion device to ensure the 'right' patient is receiving the 'right' drug, in the 'right' dose.

\*  
Patent Pending



# **Outlook™**

## **Safety Infusion System**

Step 1:

- Pharmacy places barcode label on IV medication bag and delivers to the care unit

Step 2:

- Scan Nurse ID  
Authorization verification  
Dosing record  
Administrator record

Step 3:

- Scan Patient ID  
Patient verification  
Assigns patient to infusion device







## **Outlook™**

### **Safety Infusion System**

Step 4:

- Scan Patient ID on IV medication bag  
Confirmed Patient Matching  
'Right Patient'

Step 5:

- Scan IV data  
Automated programming  
'Right Drug'  
'Right Dose'

Step 6

- Confirm information being displayed is correct
- Initiate infusion by pressing "RUN"





## **Outlook™ Extendable Technology**

Provide customers the system required to address the reduction of infusion related medication errors.

Provide an “open” system that can be integrated into existing hospital systems.

- No additional costs
- Flexibility to choose complimentary systems



## **Outlook™ Extendable Technology**

Provide Multiple “entry points” for customers to access safety infusion systems depending on their current circumstances.

Provide cost effective means to convert to more advanced infusion systems.



## Outlook™ 100: DoseGuard™ Visual Indications

Enhanced DOSE mode display includes...

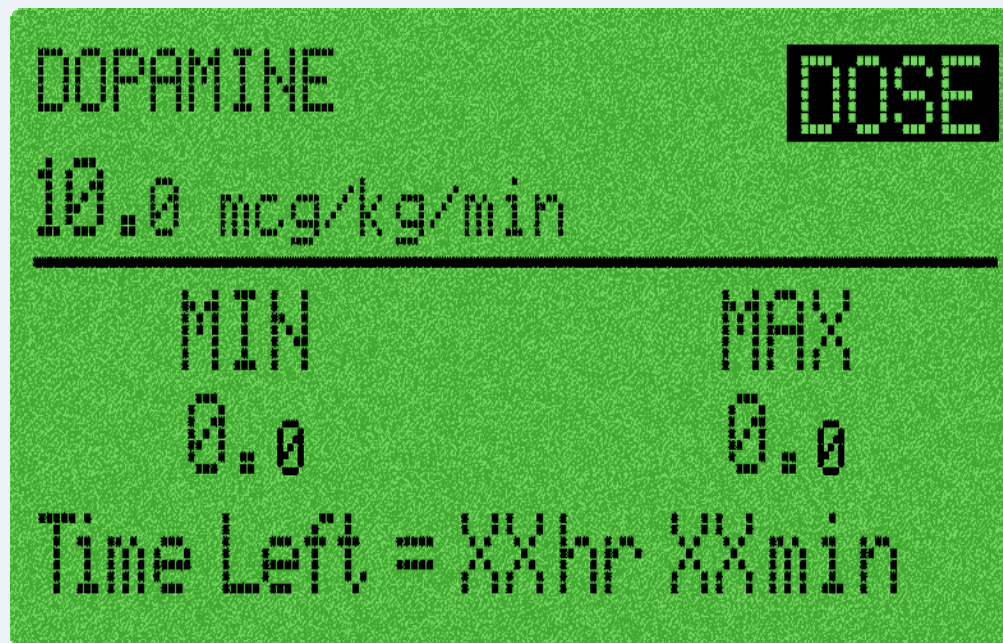
- Drug Name
- Dose
- MIN/MAX DoseGuard™ values
- Time Left to complete the infusion

```
DOPAMINE DOSE
10.0 mcg/kg/min
-----
      MIN      MAX
XXX,XXX.xx  XXX,XXX.xx
Time Left = XXhr XXmin
```



## Outlook™ 100: DoseGuard™ Visual Indications

No DoseGuard™ values assigned.

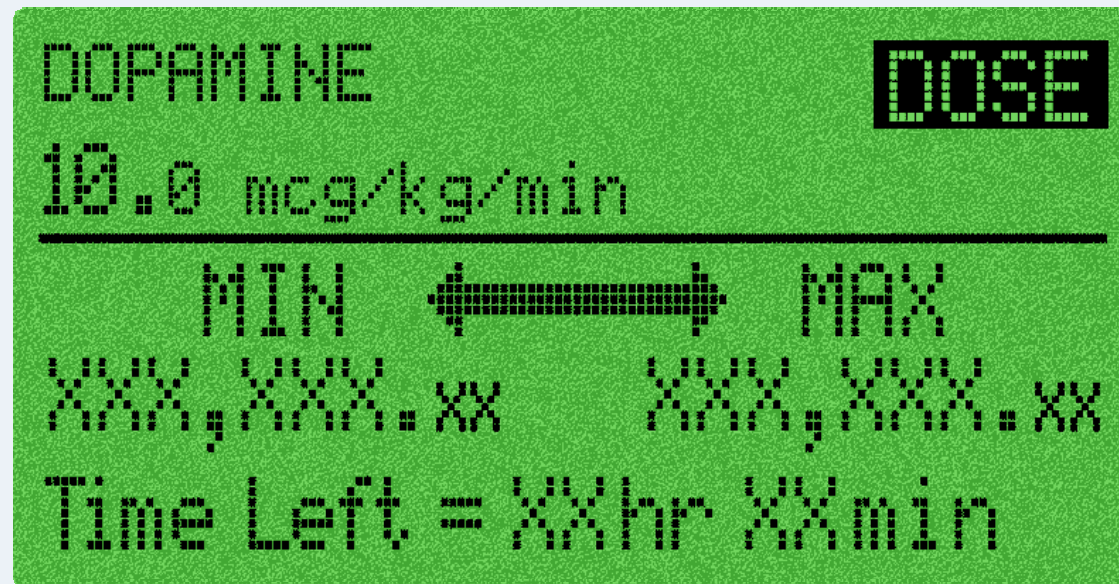






## Outlook™ 100: DoseGuard™ Visual Indications

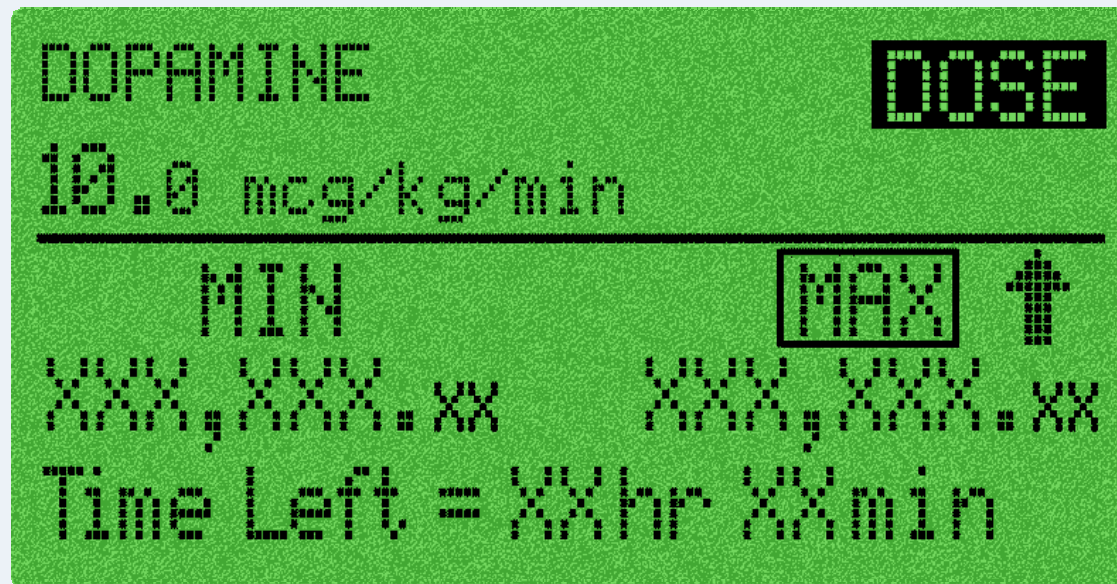
DoseGuard™ values within programmed limits.





## Outlook™ 100: DoseGuard™ Visual Indications

DoseGuard™ values above programmed limits.







## **Outlook™ 200: Features**

### **All the features of the Outlook 100**

DoseGuard™ matching DoseScan™ medications

- Scanned medications will match same drug with DoseGuards assigned.
- Matched drug categories will be displayed for DoseGuard review.



## **Outlook 100 to 200: Conversion Requirements**

New Keypanel (100-200)

New Operating Software

Pump based bar code scanning engine in handle

Plug for hand-held scanner

Reconfigure pump and drug library software

Re-label catalog number



## **Outlook 200 to 300: Conversion Requirements**

New Keypanel (200-300)

New Operating Software

Bridge/Ethernet card assembly installed in pump case.

RF shielding removed from case top to transmit RF signal.

Reconfigure pump and drug library software.

Re-label catalog number



## **Outlook 300 to 400: Conversion Requirements**

New Keypanel (300-400)

New Operating Software

Reconfigure pump and drug library software.

Re-label catalog number



## What if You Were Able to Prevent:

- ✓ Patient mismatching
- ✓ Wrong drug administration
- ✓ Accidental free-flow
- ✓ Incorrect titration
- ✓ Overdosage
- ✓ Underdosage
- ✓ Blood transfusion errors
- ✓ Unauthorized clinician entry
- ✓ Unauthorized tampering
- ✓ Incorrect or incomplete reporting
- ✓ Incorrect manual programming
- ✓ Incorrect or incomplete information
- ✓ Incorrect delivery times
- ✓ Errors in dose rate calculation
- ✓ And other IV medication errors





# You Can Prevent IV Medication Errors

*By Extending Your Outlook on Safety*

## *What if You Were Able to Comply with*

### JCAHO National Patient Safety Goals for:

- ✓ Set-based free-flow protection
- ✓ Improving the safety of using high-alert meds
- ✓ Ensuring and documenting user-authorized delivery of meds

### Bar Coding Initiative for:

- ✓ Ensuring the right patient, right dose, right drug
- ✓ Ensuring the right clinician
- ✓ Ensuring the right delivery, right time, right documentation



**Right Patient**



**Right Dose**

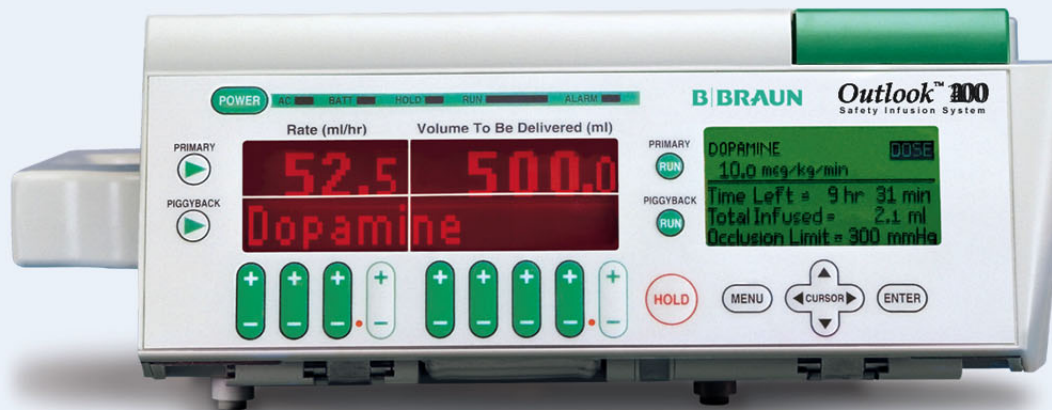


**Right Drug**



# Outlook Safety Infusion System

*With Extendable Technology*



- **Pump-Based Bar Coding**
- **Automatic Programming**
- **Patient Matching**
- **Open Architecture**



*Helps close the infusion safety loop...*

## Outlook™ 400



**With all the technology of the Outlook 300, plus...**

- Interfaces with your existing bedside systems
- Wirelessly transmits up-to-date IV orders to the infusion pump
- Improves management of patient data

*Helps ensure protective safety...*

## Outlook™ 300



**With all the technology of the Outlook 200, plus...**

- Remote access to real-time infusion data
- Open architecture designed to help reduce time spent on manual charting
- Helps to improve workflow

*Goes beyond the standard limits...*

## Outlook™ 200



**With all the technology of the Outlook 100, plus...**

- Pump-based bar coding verifies right drug, right dose, right patient, and authorized clinician
- Automatic programming to improve safety and reduce manual programming errors
- No wireless system needed to implement bar coding

*Safety begins with...*

## Outlook™ 100

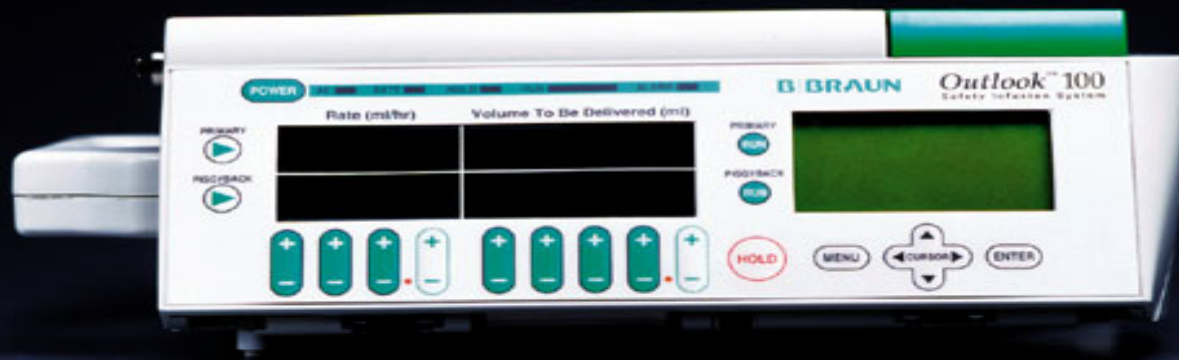


- Alerts clinician when dose limits are exceeded
- Reduces titration errors
- Provides set-based free-flow protection





## Outlook 100





## Outlook 200





## Outlook 300





## Outlook 400





## Connectivity



