BD Pyxis™ ES System solutions

Help simplify and optimise medication management

BD

The changing landscape of medication management

As the healthcare industry evolves to meet growing care demands driven by national reform and expanded healthcare coverage, hospitals and health systems alike must adopt new approaches for reducing costs and improving clinical efficiency. From reimbursement provisions to sophisticated information technology (IT) requirements to hospital system consolidation, today's complex challenges require flexible medication management solutions that span from the pharmacy to the point of care.

The BD Pyxis™ ES System is designed to address the changing healthcare landscape and help prevent medication errors, save time, increase predictability of medication availability and reduce inefficiencies throughout the medication-use process.

A platform approach

The strength of BD Pyxis™ ES System solutions

BD Pyxis™ ES System solutions are designed to help you improve medication safety, streamline standardisation efforts and reduce costs. The strength of the BD Pyxis™ ES System lies in its ability to integrate with health information technology (HIT) across the health system. This integration supports centralised control of medication-dispensing systems and gives you the data you need—when and where you need it—for immediate decision-making and reporting.

The BD Pyxis™ ES System solution is a combination of hardware and software components that:

- Provides simple, patient-centric clinical workflows

- Increases security and medication storage capacity

- Leverages centralised configuration efforts across a health system

- Facilitates compliance with selected regulatory requirements

- Enables meaningful HIT system integration

- Reduces your information technology (IT) footprint and enables leveraging of existing technology investments

- Minimises exposure to security vulnerabilities with data encryption

Supporting the health system

Simple and efficient workflows

Focused on the patient

- Cornerstone technologies of the BD Pyxis™ ES System—the BD Pyxis™ Enterprise Server, the BD Pyxis™ Medstation™ ES and BD Pyxis™ Med Link Queue and Waste—offer a streamlined user experience. By reducing steps and integrating information, these solutions save time and help keep the focus on the patient

- Streamlined, patient-centric workflows increase medication safety and efficiency

- Remote solution brings nursing workflows to the patient bedside supporting patient-centred care

- The user interface simplifies access to patient and medication data—all in one place

- Near real-time visibility of medications with the BD HealthSight™ Viewer dashboard

Optimising medication availability while prioritising medication safety

Helping reduce the risk of potentially harmful errors

- Helps nurses dispense the right medication for the right patient at the right time

- Secure transport and storage of medications with industry-leading configurability using BD Pyxis™ CUBIE™ Pocket technology, supporting medication availability

"Implementing the BD Pyxis™ MedStation™ ES on the wards allows healthcare professionals to spend more time on clinical care while securing medication dispensing. Medication availability and inventory optimisation are ensured by advanced integration with the HIT system."

Dr Etienne Cousein, Director of Pharmacy.

Valenciennes Hospital Centre, France.

Centralised system management

Health system standardisation with facility, area and device level flexibility

- Web-based accessibility for system management and reporting from any hospital computer

- Synchronised barcode database management

- Standardised user privileges and security groups

- Health system level reporting supporting centralised decision-making

HIT integration across all your facilities with scalability, flexibility and security

Provides standardisation, cost reduction and data encryption
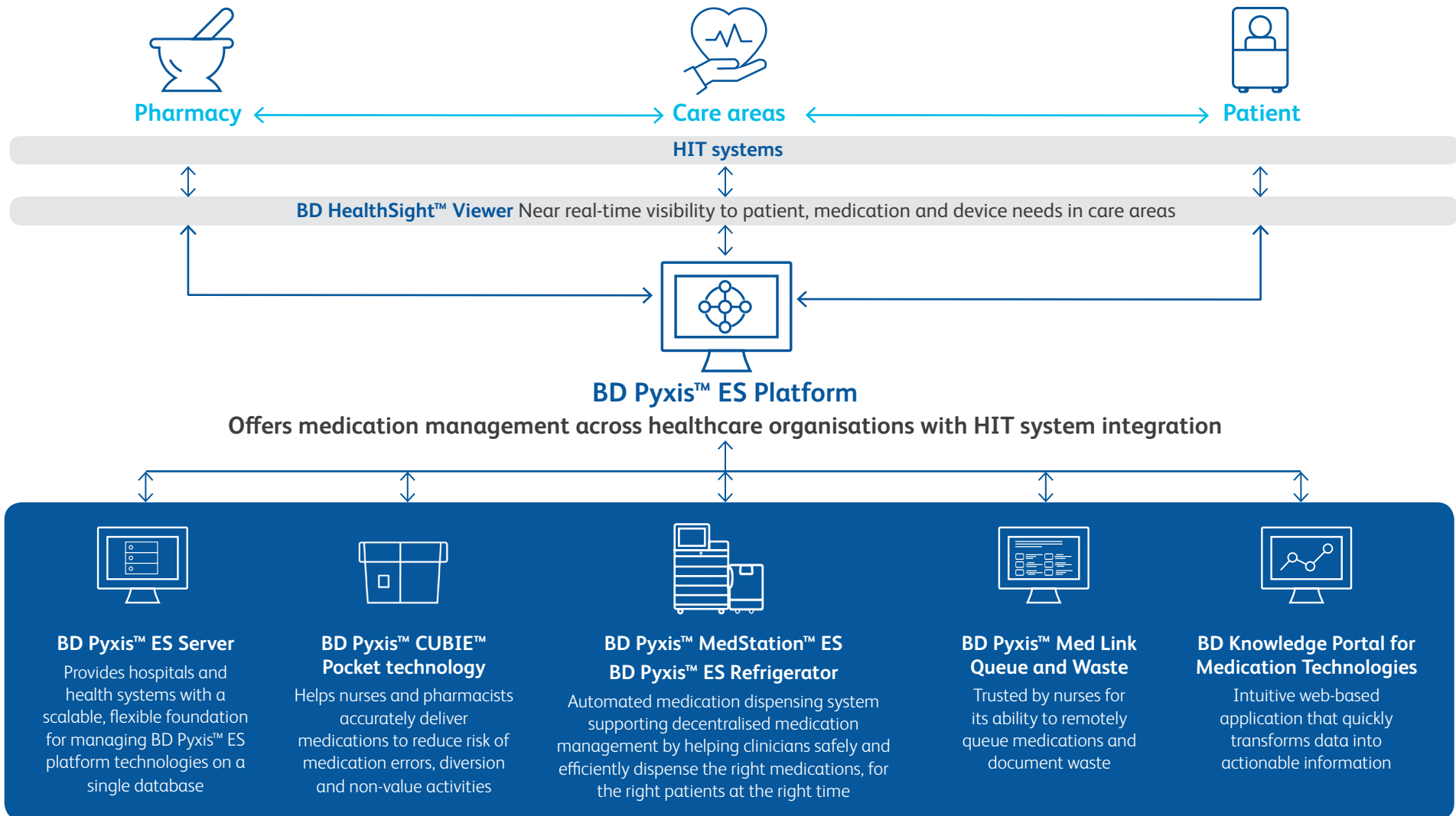
The BD Pyxis™ ES System provides flexible technology deployment options such as turnkey hardware, software-only and VMware®-ready, that can grow with you in size, scope and capacity.

- Synchronisation with the pharmacy information system (PIS) results in a single formulary for the entire health system with flexibility to meet the needs of individual facilities

- Streamlined user management via sophisticated Active Directory® integration capabilities

- Protect patient data with encryption of data in transit and at rest

The BD Pyxis™ ES System portfolio

The BD Pyxis™ ES System is made up of the BD Pyxis™ Enterprise Server, the BD Pyxis™ MedStation™ ES, BD Pyxis™ Med Link Queue and Waste and BD Knowledge Portal for Medication Technologies. This platform enables continuous technology development and supports medication management across the continuum of care.

Pharmacy ⟷ **Care areas** ⟷ **Patient**

HIT systems

BD HealthSight™ Viewer Near real-time visibility to patient, medication and device needs in care areas

BD Pyxis™ ES Platform

Offers medication management across healthcare organisations with HIT system integration

BD Pyxis™ ES Server	**BD Pyxis™ CUBIE™ Pocket technology**	**BD Pyxis™ MedStation™ ES BD Pyxis™ ES Refrigerator**	**BD Pyxis™ Med Link Queue and Waste**	**BD Knowledge Portal for Medication Technologies**
Provides hospitals and health systems with a scalable, flexible foundation for managing BD Pyxis™ ES platform technologies on a single database	Helps nurses and pharmacists accurately deliver medications to reduce risk of medication errors, diversion and non-value activities	Automated medication dispensing system supporting decentralised medication management by helping clinicians safely and efficiently dispense the right medications, for the right patients at the right time	Trusted by nurses for its ability to remotely queue medications and document waste	Intuitive web-based application that quickly transforms data into actionable information

With a combination of hardware and software solutions, the BD Pyxis™ ES System provides:

Simplified caregiving

Nurses can find medication and patient information all in one place
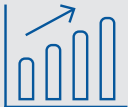
Medication safety

Safety enhancements help prevent harmful medication errors, adverse drug events and the risk of diversion

Standardisation

Streamline across health systems for formulary and user management, reporting tailored to suit site-specific needs

Scalability

Allow health systems to leverage common HIT interfaces and existing IT investments helping to reduce IT footprint

Data security

Valuable patient and medication data are protected

End-to-end medication safety

Holistic medication inventory optimisation

Improving clinician and HIT efficiency

Supporting visibility and communication between pharmacy and nursing

Get near real-time visibility to patient, medications and device needs to proactively address issues before they become problems for nursing and patients.

BD HealthSight™ Viewer is an integrated web-based pharmacy operations dashboard that combines critical data from the BD Pyxis™ ES System into a single view improving visibility to bottlenecks in pharmacy fulfillment to optimise medication availability and improve visibility between pharmacy and nursing.

BD HealthSight™ Viewer capabilities for BD Pyxis™ ES System

Attention notices: Exclusive visibility of BD Pyxis ES system attention notices so pharmacy staff can address them before they become problems for nurses and patients.

Dose requests: Simple visibility of medication requests from nursing made through BD Pyxis™ Med Link Queue and Waste.

Delivery tracking: Near real-time visibility of medication status and location to help reduce wasted time and effort.
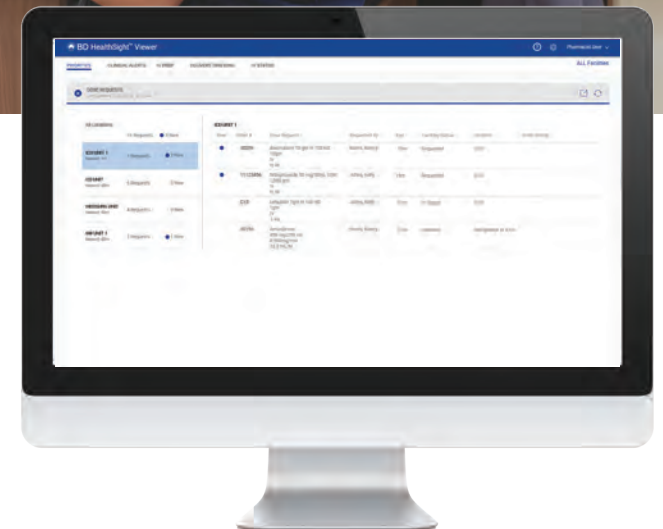
See attention notices at a glance

BD HealthSight™ Viewer dashboard supports improved visibility and efficiency in pharmacy and care areas

Nursing units

BD HealthSight™ Viewer

Pharmacy

BD HealthSight™ Viewer

BD HealthSight™ Viewer

Nursing units

BD HealthSight™ Viewer

Nursing units
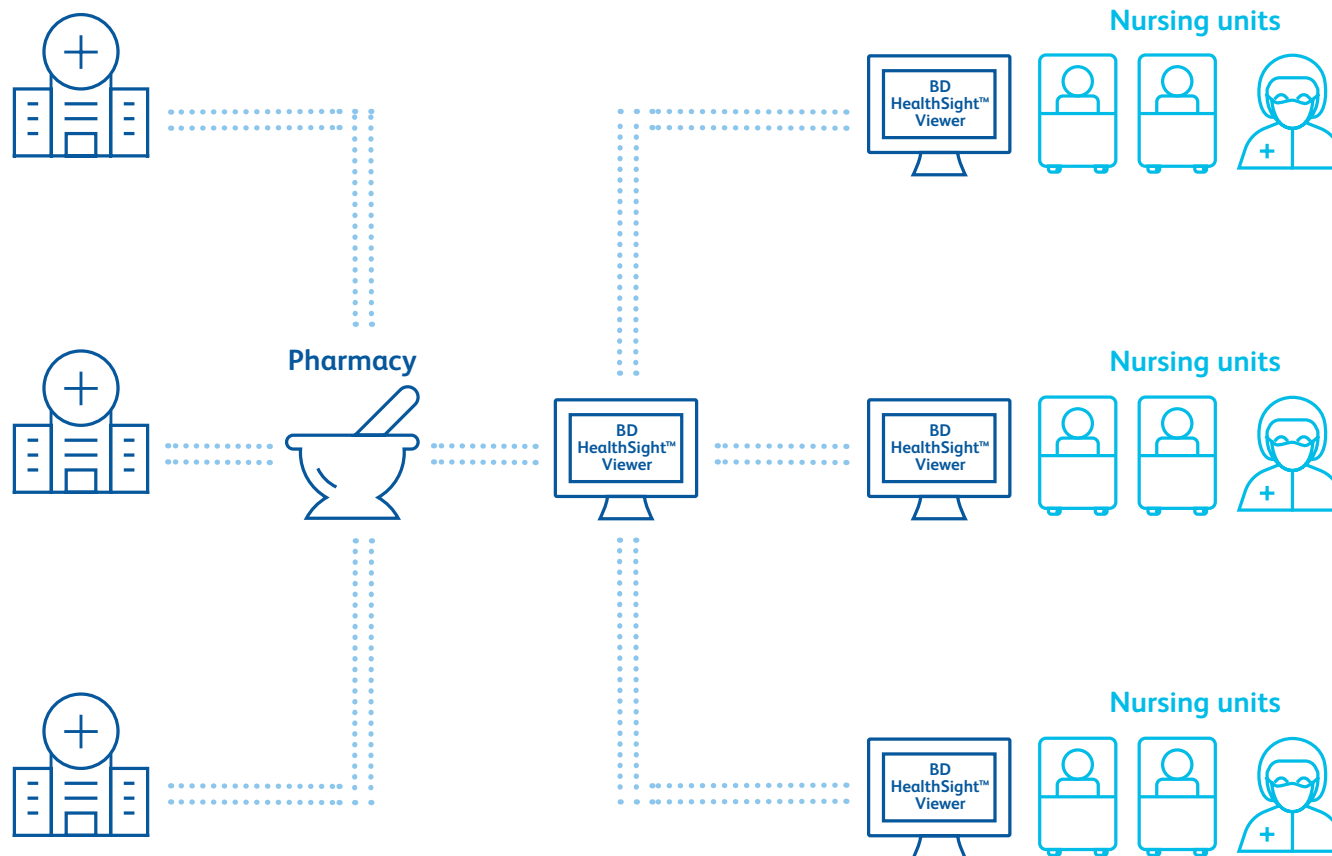
View medication logistics

Provide nurses and pharmacists with the delivery status of medications, removing blind spots and wasted time and effort.

Prioritise medication orders

Pharmacists can use one dashboard to see prioritised key alerts and notifications.

Anticipate medication needs

By providing visibility to needs on the patient floor, pharmacists are able to proactively address critical replenishments, imminent stockouts and missing doses.

View medication status

Nurses can confidently view the status of medication orders in the pharmacy and plan their care schedule around projected arrival times, reducing calls to the pharmacy.

Medication optimisation made easy—with actionable information

BD Knowledge Portal for Medication Technologies is an intuitive, web-based application that provides full visibility of the medication journey inside your hospital or group of hospitals quickly transforming data into actionable information to enable critical decision making.

Users can access data and key performance indicators with just a few clicks to help optimise devices, track performance trends and standardise hospital policies, without data overload or additional manual steps.
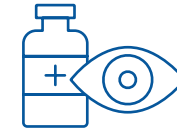
Provides ability for users to perform their own ad-hoc medication dispensing analytics for the single hospital or across the health system.
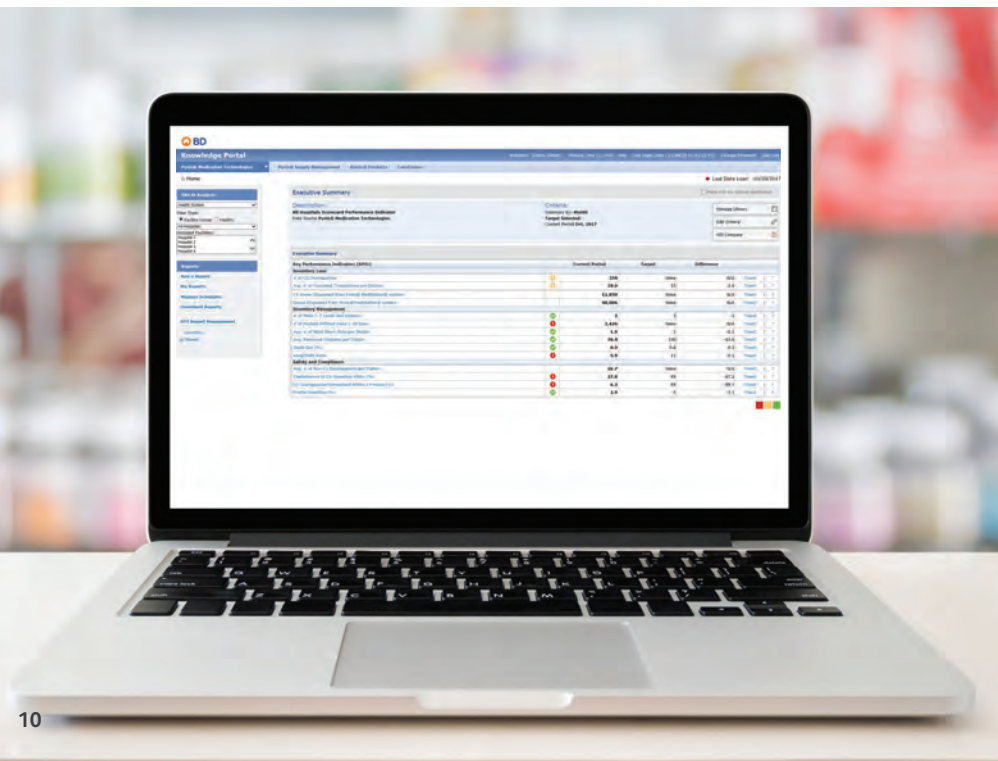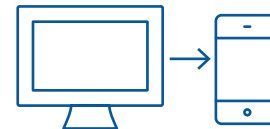
Use data to make informed decisions

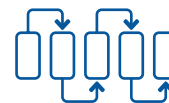Monitor compliance with policies on controlled substance tracking

Monitor compliance on dispensing medications without a patient order

Streamline multiple device management

Help prevent stock-outs by optimising medication storage locations

Identify potential diversion issues

"The BD Knowledge Portal for Pyxis™ Medication Technologies helps us achieve our mission to provide comprehensive pharmaceutical care to all patients in a safe, efficient and cost-effective manner and the analytics can help us find areas for improvement through pre-built reports that are very easy to run."

Dr Ahmed Al-Jedal, Director Pharmaceutical Care Division and Consultant Clinical Pharmacist.

King Faisal Specialist Hospital & Research Centre, Riyadh, Saudi Arabia.

"You have full knowledge of who took which medication, when and for which patient. This is invaluable, in particular for sensitive products such as narcotics for which there is a traceability obligation. Here, we've gone from the stone ages, with pieces of paper filled out by nurses each time we dispensed medication, to a fully integrated electronic system which can carry out traceability functions much better and much more easily for the healthcare staff."

Prof Pascal Bonnabry, Chief Pharmacist.

University Hospital Geneva, Switzerland.

Solving today's challenges—pharmacy

	Features and functionalities	**Proven results**
Medication management is a complex process . Up to 40% of medication errors occur during the dispensing stage[1]	• High degree of configurability allows pharmacists to adapt to different formulary settings • Unique BD Pyxis™ CUBIE™ Pocket technology • Safety enhancements such as clearly highlighting patients with the same last name	**Safe and efficient medication management** **100%** reduction in narcotic registry errors.[2] **93.7%** reduction in incorrect medication errors.[3] **53%** reduction in administration errors.[3]
Poor medication management leads to delays, extra costs, wastage and increased staff workload	• Visibility of medication use and availability • Expanded scanning functionality helps ensure the right medications are loaded into the right system and dispensed for the right patient	**Reduce costs and drive efficiency beyond the pharmacy** **30%** reduction in products returned to the central pharmacy.[4] **50%** stock reduction.[2] **75%** reduction in drug deliveries.[5] Up to **100%** reduction in expired drugs.[2] **20%** reduction in monthly patient costs in intensive care units (ICUs), increased drug stock while diminishing storage space in the unit.[6]
The pharmacy plays a key role in control and evaluation activities related to medications	• Data stored on server for 90 days • Advanced analytics and up to 10 years reporting through BD Knowledge Portal for Medication Technologies • Near real-time visibility on medications and device needs in care areas with BD HealthSight™ Viewer	**Enable traceability and analytics** **72** hours per month saved managing station inventory by using BD Pyxis™ Enterprise Server device inventory report.[8] Support for your compliance efforts with directives on monitoring controlled substances and distributing medications without a prescription. Identification of potential drug diversion.

"BD Pyxis™ MedStation™ ES provides easy access. At every access, you are remined how much dose you need and how many vials you are going to take. It also doublechecks controlled drugs, which is very helpful."

Critical Care Nurse.

State and local government hospital in the Middle East.

"You can be interrupted when preparing medications, you can be distracted, and if you only have one place that opens and contains the right medication, this is safety for us too."

Mathieu Laghzoun, Nurse.

University Hospital Geneva, Switzerland.

Solving today's challenges—nursing

	Features and functionalities	**Proven results**
Find medications when you need them	• Flexible, reliable BD Pyxis™ CUBIE™ Pocket technology provides configurable capacity to store all types of medications, bringing more medications to care areas	**Patient safety enhanced** **99.6%** of medications needed in care areas are available with the BD Pyxis™ ES System.[1] **24%** increase in the number of highly secured medications stored.[7] **94%** reduction in wrong-dose errors.[3]
Reduce trips to the pharmacy and save time	• BD Pyxis™ MedStation™ ES helps nurses dispense the right medication for the right patient at the right time by restricting access to single-line items • BD Pyxis™ CUBIE Pocket opens quickly and automatically to the selected medication • BD Pyxis™ ES System's patient-centred user interface reduces the time required to obtain medications	**Four-step dispensing in only five seconds beyond the pharmacy** **94%** reduction in time to initial dose because more medications are closer to care areas.[10] **34**-hour-per-month reduction in the time that nurses spend on dispensing registration.[2] Over **4,000** waste transactions documented per month on average in a 220-bed facility.[11]
Simplify the caregiving process	Streamlined user interface provides nurses with access to comprehensive medication and patient information in one place • The BD Pyxis™ MedStation™ ES' "My Patients" workflow screen helps ensure nurses are always focused on what is most important—their patients • BD Pyxis™ Med Link Queue and Waste remote software • Near real-time visibility to patients, medications and device needs with BD Healthsight™ Viewer	**More time for patient care** **32%** increase in nursing workflow efficiency can be realised with BD Pyxis™ Med Link Queue and Waste: medications can be queued at the bedside while assessing the patient and document waste remotely to increase nurses' availability.[12] **62%** of nurses reported a time savings of 80% in retrieving medications from the BD Pyxis™ MedStation™ ES compared with getting medications from the pharmacy.[14] **92%** of nurses agreed the BD Pyxis™ MedStation™ ES makes the medication administration process easier.[15]

"It has given us a 21st-century approach to medication management. There is less movement of people around the department. It's the drugs that move, not the technicians."

Paul Nickell, Pharmacy IT Manager.

New Cross Hospital, Wolverhampton, United Kingdom.

Solving today's challenges—information technology (IT)

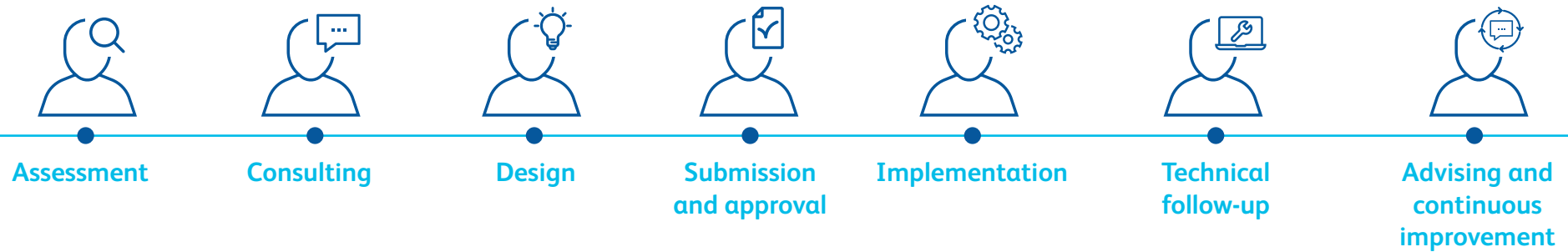|	**Features and functionalities**	**Proven results**
Minimise exposure to security vulnerabilities	• Protect patient data with high standards of data encryption during transit and at rest • Manage critical backup and failover within hospital protocols • Integrating the system with IT procedures makes it more fault-tolerant for constant availability	**High standards in data security** Protect patient data, control user access and manage system patching, antivirus and monitoring from within the IT data centre.
Standardise processes and save time	• Expanded management capabilities ideally support your HIT systems. For example, integration with Active Directory® brings user management within IT control and reduces redundant systems	**Highly configurable system management** **81%** reduction in user account management time thanks to Active Directory® system integration.[7]
Minimise the amount of IT infrastructure	• The BD Care Coordination Engine, a software-based interface engine enabling centralised integration between BD Pyxis™ Technologies and HIT systems, allows hospitals and hospital systems to add functionality, devices and new BD technologies as needs arise • Centralised platform accessible via the web can be logged on to from any device • Consolidation of multiple systems and servers into just one • Advanced integration with your PIS enables gains in efficiency and interoperability • Interface with electronic prescriptions is possible	**Common interfacing functionality** Centralised system management and advanced data integration supports standardisation of user roles, formulary, barcodes and system configuration to increase efficiency and safety. Reduction in formulary management time thanks to PIS integration.[7] One unified, web-accessible platform scales to support a hospital or health system as it evolves and grows, reducing the need to manage multiple instances and interfaces.
Centralised management and visibility across all facilities	• Scalable, web-accessible medication management • Integrated user management with the hospital Active Directory® • Simplified user administration system • Synchronised formulary for the health system, adjustable for single facilities	**Enjoy more control with less complexity** **50%** minimum reduction in formulary system management time thanks to the BD Pyxis™ ES System.[9] **90%** reduction in barcode database management time thanks to the BD Pyxis™ ES System being integrated with the PIS.[9] Pharmacies can focus on user privileges, while allowing IT to manage individual user access.

The BD difference

A consultative approach

Projects to upgrade medication supply chains are complex and need to be structured. This is why BD supports you in change management—from project launch to advising on process integration.

Assessment   **Consulting**   **Design**   **Submission and approval**   **Implementation**   **Technical follow-up**   **Advising and continuous improvement**

Consulting

Project management
Workflow assessment
Workflow design map
Solution design
Implementation plan

Education and analytics

Automatic reporting
Automatic key performance indicators (KPIs)
Benchmarking
eLearning solutions
Customer education

BD Customer services

Training

System training
Support validation
User acceptance testing
Super-user training
Onsite go-live support

Support

Maintenance
Remote support service
Testing environment
Drug database build support

BD customer services handle:

>1,000 Technical support phone calls answered every day

>5,000 Active BD support agreement customers

>75,000 Pharmacists, nurses, respiratory therapists and other customer clinical staff trained by BD every year

>100,000 Annual device installations

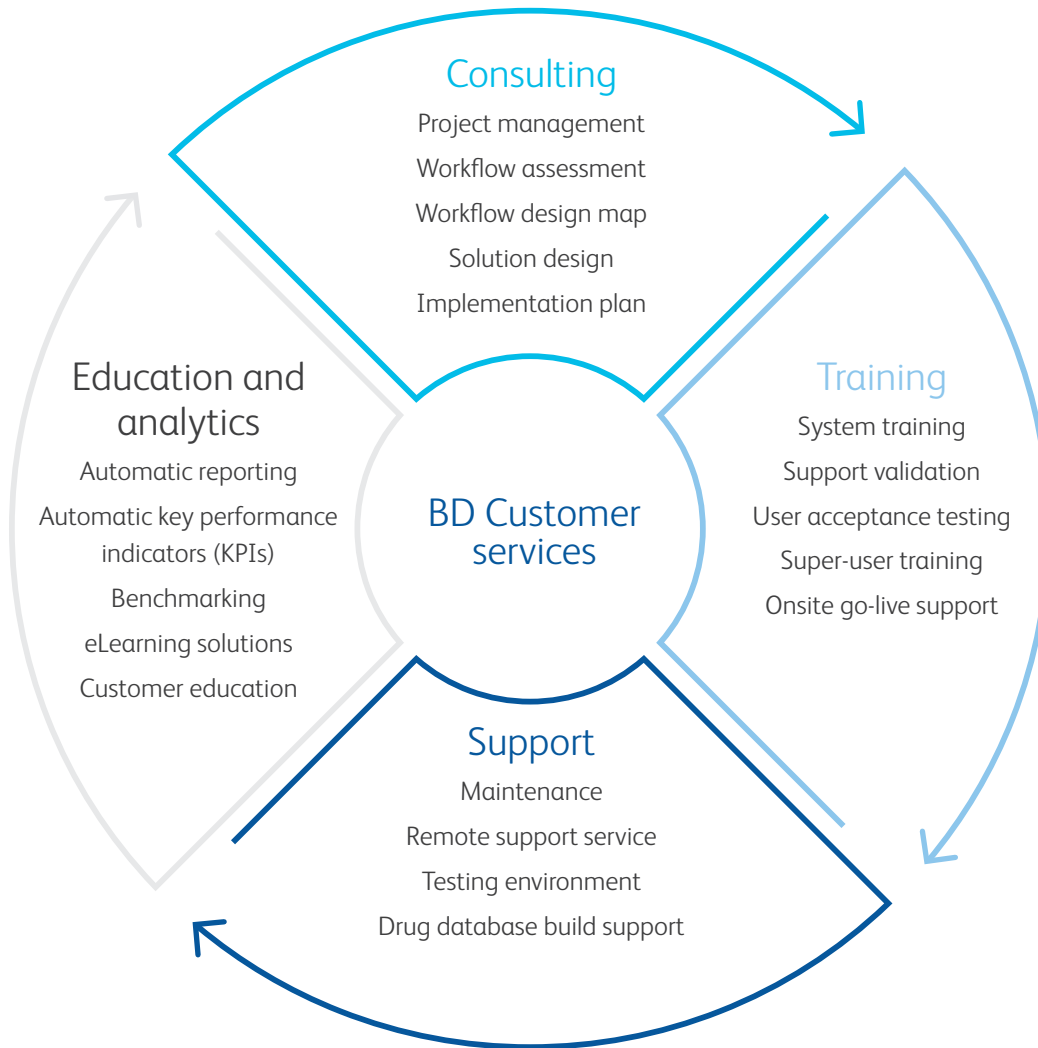**>130,000** Active remote support connections

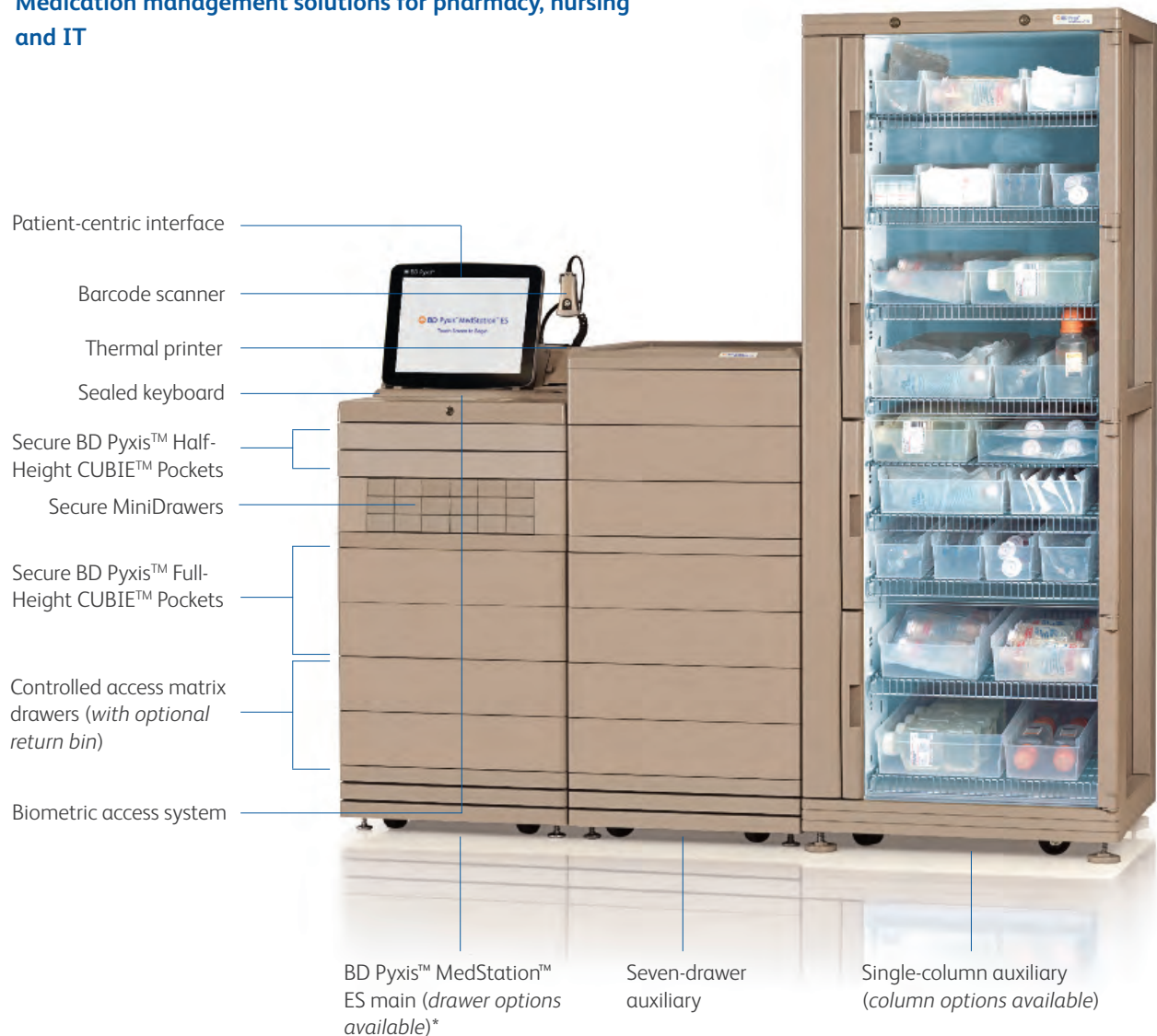**>500,000** Service parts shipped with a 95% fill rate every year

>1,500,000 Devices installed in healthcare facilities worldwide

BD Pyxis™ MedStation™ ES

Medication management solutions for pharmacy, nursing and IT

Patient-centric interface

Barcode scanner

Thermal printer

Sealed keyboard

Secure BD Pyxis™ Half-Height CUBIE™ Pockets

Secure MiniDrawers

Secure BD Pyxis™ Full-Height CUBIE™ Pockets

Controlled access matrix drawers (*with optional return bin*)

Biometric access system

BD Pyxis™ MedStation™ ES main (*drawer options available*)*

Seven-drawer auxiliary

Single-column auxiliary (*column options available*)

BD Pyxis™ CUBIE™ Pocket technology

Security, flexibility and accessibility - Multiple pocket sizes to meet your needs.

BD Pyxis™ ES Refrigerator

Provides integrated and secure, single line-item access to high-risk and high-value refrigerated medications via BD Pyxis™ MedStation™ ES.

61.0W x 73.7D x 81.2 cm H (*exterior*)
49.5W x 58.4D x 50.2 cm H (*interior*)

* Various drawer/column options are available.

BD Pyxis™ MedStation™ ES drawers

BD Pyxis™ Full-Height CUBIE™ Pockets

Secure triple-wide MiniDrawer (*1-6*)**

Matrix drawer (*with optional return bin*)

Secure single-wide MiniDrawer (*1-8*)**

* With selected software releases
** Configurable options available

BD Pyxis™ MedStation™ ES mains

Six-drawer main
57.9W x 67.8D x 138.2 cm H

Four-drawer main
57.9W x 67.8D x 138.2 cm H

Two-drawer main
57.9W x 67.8D x 70.9 cm H

Zero-drawer main
57.9W x 67.8D x 37.3 cm H

BD Pyxis™ MedStation™ ES auxiliaries

Seven-drawer auxiliary
57.9W x 68.6D x 119.4 cm H

Half-height column auxiliary
78.7W x 71.1D x 109.2 cm H (*two doors*)

Single-column auxiliary
78.7W x 71.1D x 201.9 cm H (*four doors*)

Double-column auxiliary
132.1W x 71.1D x 201.9 cm H (*eight doors*)

All products and product specifications depend on model and local availability.
For more information, please contact your local sales representative.

BD vision for connected medication management

Pharmacy ←→ Care areas ←→ Patient

HIT systems

BD HealthSight™

BD Pyxis™ Inventory Connect*

BD Rowa™   BD Cato™   BD Pyxis™   BD Alaris™, BD BodyGuard™,
connected pumps

Enhance care delivery

Effective cost management

Improve patient outcomes

Mitigate risk

End-to-end medication safety

Holistic medication inventory optimisation
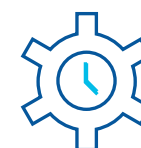
Improving clinician and HIT efficiency

* BD Pyxis™ Inventory Connect is a combination of hardware and software solutions for the safe and efficient inventory management of automated and manual pharmacy stock enabling accurate inventory visibility, compliance and control. All products are depending on local availability. For more infomation, please contact your local sales representative.

1. Eur *J Hosp Pharm*: first published as 10.1136/ejhpharm-2019-002081 on 21 April 2020. Downloaded from http://ejhp.bmj.com/ on April 27, 2020 by guest. Protected by copyright)
2. Portelli G, Canobbio M, Bitoni R, Della Costanza C, Langella R, Ladisa V. The Impact of an Automated Dispensing System for Supplying Narcotics in a Surgical Unit: The Experience of the National Cancer Institute Foundation of Milan. *Hosp Pharm.* 2018;54(5):335-342.
3. Cousein E, Mareville J, Lerooy A, et al. Effect of automated drug distribution systems on medication error rates in a short-stay geriatric unit. *J Eval Clin Pract.* 2014;20(5):678-684.
4. de-Carvalho D, Alvim-Borges JL, Toscano CM. Impact assessment of an automated drug-dispensing system in a tertiary hospital. *Clinics (Sao Paulo).* 2017;72(10):629-636.
5. Bonnabry P, Francois O. Return on investment: a practical calculation tool to convince your institution. *Eur J Hosp Pharm.* 2020;27(2):111-113.
6. Serrano PS, Pin AC, Copa PC, Rodriguez NP. Introduction of an automated drug dispensing system in an intensive care unit. *Eur J Hosp Pharm.* 2012;19(2):141.
7. King Faisal Specialist Hospital and Research Centre. *Optimizing Medication Management Enterprise-wide.* Riyadh, Saudi Arabia: King Faisal Specialist Hospital and Research Centre; 2016.
8. Mainstay Consulting Group LLC. *Pyxis ES Customer #4 Interview Results.* Concord, NH, United States: Mainstay Consulting Group LLC; 2016.
9. Mainstay Consulting Group LLC. *Pyxis ES Value Analysis Customer Interview Results.* Concord, NH, United States: Mainstay Consulting Group LLC; 2016.
10. CareFusion. *Making measurable improvements in safety, efficiency and cost.* Hew Haven, CT, United States: Hospital of Saint Raphael; 2011.
11. BD. *Analysis of Pyxis ES system client usage.* Franklin Lakes, NJ, United States: Becton, Dickinson and Company; 2016.
12. Cerner Corporation. *The Clinical Benefits of CareAware Enhanced Dispensing.* Kansas City, MO, United States: Cerner Corporation; 2014.
13. Aethon Inc. *MedEx Streamlining Your Hospital Pharmacy Operations: How a Real-Time Advanced Medication Tracking System Increases Productivity and Improves Patient Care.* Pittsburgh, PA, United States: Aethon Inc.,; 2014.
14. Source from a third-party survey. Survey number: E33-A92-746. Publication date: 2016.
15. Source from a third-party survey. Survey number: 294-966-71A. Publication date: 2016.

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