

A Publication of the
Health Industry Business Communications Council



Provider Edition 2007

HIBCC, Hospitals & Patient Safety >

Preventing Hospital Errors:

LEVERAGING INDUSTRY
STANDARDS FOR
PATIENTS, PRODUCTS
& PROCUREMENT



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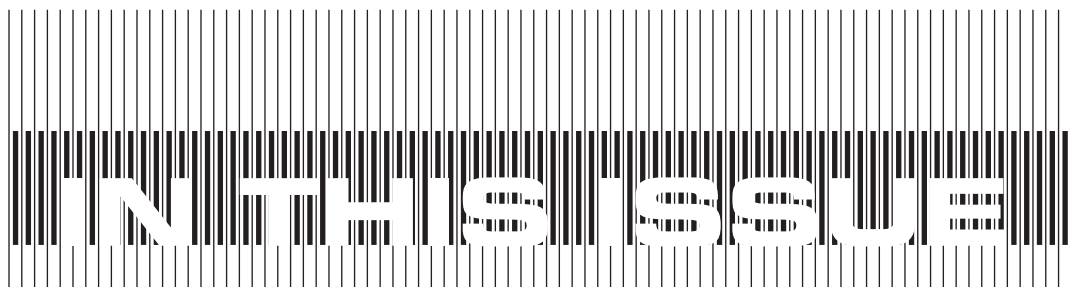
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In 2004 MGH

embarked on a project to define and develop a safer system for the administration of medication to its patients. The success of their efforts led the organization to seek formal standardization of their processes, in order that they could be easily and uniformly implemented by other providers.

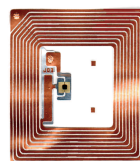
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HIN: Healthcare's Facility ID for Providers

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Much has been promised about the revolutionary potential of RFID. While the

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HIBC: The Preferred Standard for Safer ID

Bar coding has proven itself as an effective tool for enabling more efficient and more

accurate processes. In healthcare, the potential is even greater. Here's what you need to know about healthcare's bar code standard for product tracking. And — In 2004, the FDA began regulating bar code labeling of human drug products — now it considers medical device labeling.

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How Can HIBCC and Your Hospital Partner to Reduce Error?

HIBCC will shortly celebrate its twenty-fifth year of service to the healthcare community, continuing the mandate given to us in 1983 by the American Hospital Association (AHA). In '83 the AHA created HIBCC by calling together a task force of supplier organizations — representing manufacturers and distributors of both pharmaceuticals and medical devices — to develop a labeling standard to meet the unique requirements of healthcare providers. Although retail labeling standards were already in use, provider organizations like the AHA knew that medical care would need standards incorporating more stringent patient safety considerations not available in the generic bar code standards commonly used in warehouses and grocery stores. Today, HIBCC continues to apply these same principals — enhanced standards for patient safety — as newer technologies for labeling and identification are developed and standards applied.

HIBCC thus became healthcare's supply chain standards organization. Through the years, we have continued to emphasize "safety first" as our scope has expanded beyond labeling. Now more than ever, thanks to the advent of electronic and Internet commerce, healthcare institutions can benefit from applying error-reducing standards to automated practices. Logistics management, cost containment measures and system integrity can enhance the safety of the people entrusted to healthcare institutions only if they adhere to standards that keep error reduction, traceability and medical-specific requirements at the forefront.

Over the years many individuals from the provider community have served on our Board of Directors and various operating committees, thereby keeping our focus on the real customer — their patients. Hospital CEOs, CIOs, purchasing managers, pharmacy directors and others have been key contributors to HIBCC.

Currently our Board includes individuals representing hospital groups, such as HCA, as well as individuals



Claude Ritman
AHA's most recent Board appointment.

who can speak to the needs of individual facilities. An excellent example is our newest AHA-appointed Board member — Claude Ritman, Executive Director of Coler-Goldwater Specialty Hospital and Nursing Facility on Roosevelt Island in New York City. Coler-Goldwater is a 2,000- bed, comprehensive care center

that provides high quality medical, rehabilitative and long-term care to New York City residents as part of The New York City Health and Hospitals Corporation (HHC). Claude's facility-specific perspectives compliment those of our Board members who work in the larger management and buying organizations that are by necessity more distant from direct patient care. Both perspectives are crucial to our work.

We invite you to join our efforts by participating in our governance process, whether it is at the Board or Committee level. For additional information please email info@hibcc.org. ■



Robert Hankin, PhD.
President / CEO,
HIBCC

PATIENT SAFETY

SAFER PATIENT MEDICATION ADMINISTRATION: LESSONS FROM MASS GENERAL

In 2006, HIBCC and Partners HealthCare Systems began a joint effort to develop a standard to enhance patient safety through automated medication administration systems. The standard, entitled, “Positive Identification for Patient Safety; Part 1: Medication Delivery” defines the processes and technologies involved with safe medication management.

The standard is being developed from work initiated by Massachusetts General Hospital (MGH), a hospital within the Partners HealthCare System. In 2004, MGH embarked on a project to define and develop a safer system for the administration of medication to its patients. The success of their efforts led the organization to seek formal standardization of their processes, in order that they could be easily and uniformly implemented by other providers.

Two outpatient chemotherapy IV pumps looked very similar, but operated very differently. One required input of the amount of drug per hour; the other — the amount of drug for the duration of therapy — (which can be multiple days.) The probability for error (and death) was staggering. The Sims Lab at the hospital had already seen the need almost 10 years before and had the vision to design the concept of IV pump libraries for IV ‘smart’ pumps. (The Sims Lab holds the patent for it. That patent is licensed by virtually every IV ‘smart pump’ manufacturer.) These libraries contain information about drugs, their uses and safe dose limits. The dosing instructions the clinician enters into the pump are checked against the hospital-defined drug library limits for safety. Although the use of drug libraries can certainly reduce medication errors, a clinician could still select a wrong drug or concentration which could potentially harm the patient.

It all started with two models of outpatient IV pumps and a bar code.



“Since that time, not one medication error has occurred using the bar codes to program the IV pumps.”

The Sims Lab and the MGH Department of Pharmacy were also early promoters of Patient Safety measures. The IV pump situation was a prime candidate for a safety initiative. They decided that any Ambulatory pump to be programmed for the duration of therapy would be programmed ONLY by a bar code. And only by a bar code produced from their Pharmacy system. They found a suitable ambulatory infusion pump and modifications were made to their inhouse Pharmacy system to produce a custom linear bar code on the IV medication labels — from orders that had been reviewed and approved by Pharmacists. This initiative was a resounding success. Since that time, not one medication error has occurred using the bar codes to program the IV pumps.

In 2003, The Sims Lab at the hospital began a dialogue with IV pump manufacturers to explore the possibilities of embedding a bar code reader in IV pumps. The bar code reader would read drug information from a bar code on a medication label and use that information to validate against the 'onboard drug library'. Workflow models for the pumps were developed.

When the hospital migrated to a new Pharmacy System, they decided they did not want to delay their implementation by requiring vendor customization for their chemotherapy IV pump barcodes. To solve the problem, software was created on Intermec programmable printers to construct properly formatted bar codes for the IV chemotherapy pumps from the pharmacy system label data.

This led to demonstrations in April 2004 with leading pump manufacturers that showed how a 2D symbol could program a smart infusion pump. An Intermec bar code printer received (existing legacy) pharmacy system label data and produced 2D symbols containing patient, drug and order information.

The pump was a virtual infusion pump on a PC that contained a drug library. Scenarios for wrong patient, unknown drug and overdosing dose were demonstrated. The workflow of the pump followed the model previously developed.

Massachusetts General Hospital then asked that a formal smart infusion pump auto-id specification be developed. Upon completion of this specification, the Partners Healthcare High Performance Medicine Committee for patient medication safety worked to help expand the standards to include several key areas.

Previous good work done by many Partners groups was reviewed. Interviews were conducted with several member hospitals in the Partners system along with pump manufacturers. Analysis was done to determine both the practicality and reality of what data was needed by both the clinicians and the devices. The resulting work includes standards for employee badges, patient wristbands and other patient labeled items, IV and non-IV medications, and device license plates.

Although prior work has been done in each of these areas by various organizations, most of the focus has been on simple identification, asset management, and/or supply chain needs. This design was from a "patient safety first" perspective, and incorporated the 'five rights' (patient, medication, route, dose, time).

KEY DESIGN POINTS

The design goals included extensibility, versioning, a building blocks approach, clear discrimination from other information, issuing provider identification and a compact symbol size.

The resulting standards define records that are defined by three letter codes similar to the format of HL7 records and XML \ HTML style tags to encapsulate the overall message and contextual groups. The design is further optimized by ordering the fields in each record from mandatory to least significant. **(cont. on page 12)**

PROCUREMENT

The industry standard for getting the right product to the right location for the right price... and at no-charge to providers.

A Procurement Dilemma

The materials management process is a fundamental but complicated activity for all healthcare organizations, regardless of size. Managers and administrators are burdened with the task of establishing and maintaining multiple identifiers for each of their suppliers, as well as for each facility and ship-to location at which they receive products.

Given the number of suppliers and delivery locations, there are potentially thousands of proprietary numbers to maintain. The task can be overwhelming in complexity and a significant drain on both human and financial resources.

The Solution

In 1988, the healthcare industry undertook an effort to address the issue and streamline the process. The Health Industry Number (HIN®) System is the result.

During the past fifteen years HIN has been successfully deployed within the supply chain to streamline manufacturer-supplier/distributor-GPO processes, and has now been expanded to allow providers to directly use it and benefit as well.

Provider organizations will now be better able to manage their procurement functions when interacting with their trading partners, GPOs and others.

What is the HIN?

The HIN is a nine-character, alphanumeric identifier that is assigned to every facility, delivery location and business activity in the healthcare supply chain. Each HIN is consistent, unique, and flexible enough to represent a facility as well as the numerous ship-to locations within its organization.

The first seven positions of the HIN comprise the “base HIN” which identifies a health care entity at a particular location. The seventh position of a base HIN is a check-digit for verifying the first six positions.

The last two positions of the HIN comprise the suffix that uniquely identifies a specific ship-to location, alternative location or a functional affiliation with the entity.

Why use the HIN?

Many participants in the healthcare supply chain have already realized the benefits of the HIN System. Further benefits can now be derived by provider organizations, including:

Reduce Administrative Resources

By using the HIN when communicating orders or talking to suppliers, an organization can eliminate the maintenance of supplier assigned customer numbers. Staff no longer needs to look up and/or remember potentially thousands of supplier assigned customer identification numbers, resulting in a reduction in many manual operations.

Providers Control Definition

Through use of the HIN and communication with HIBCC, provider organizations can define who they are and how their trading partners view them in a consistent framework.

Facilitate Accurate Pricing And Reporting

By providing a common and consistent identification to its suppliers, organizations can eliminate the confusion of disparate identifiers and ensure that all its trading partners are using the same accurate view. This is a critical function when communicating membership for contracting and sales reporting.

How Does the Industry Use HIN?

HIN has become an integral component of many supply chain processes, including:

- membership and pricing eligibility;
- drug pricing;
- sales reporting;
- drop shipments;
- contract administration;
- rebate reconciliation.

Through a centralized and standardized repository, the HIN System provides consistency and accuracy of

customer identification for hundreds of major manufacturers, distributors and provider organizations, as well as US government agencies such as Department of Defense, US Public Health Service, VA Hospital System and the Centers for Disease Control.

HIN has been endorsed by the Efficient Healthcare Consumer Response (EHCR) initiative as a key tactical enabler for reducing supply chain costs, and is also endorsed by the Healthcare Distribution Management Association (HDMA) and the Health Industry Distributors Association (HIDA) for customer identification in their contract administration guidelines.

Who Maintains the HIN?

The HIN System is maintained in a common, centralized database that is administered by the Health Industry Business Communications Council (HIBCC). HIBCC is an industry sponsored, non-profit standards development organization (SDO) that was founded by major healthcare associations in 1983 and is accredited by the American National Standards Institute (ANSI). In addition to HIN, HIBCC also maintains many industry standards in support of efficient e-commerce applications, including: Health Industry Bar Code (HIBC) Standards, Universal Product Numbers (UPN) and the Labeler Identification Code (LIC).

To secure the integrity of the HIN System, HIBCC applies a uniform identification standard to all entities submitted for HIN enumeration. The standardization process includes a review to ensure that duplication does not occur in the database, as well as phone verification of all information about the entity. Since inception, the number of records in the HIN Database has grown from 7,000 hospitals to over 1.5 million facility records.

How do Hospitals Communicate with HIBCC?

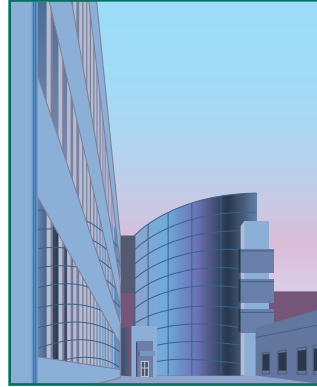
HIN information about their respective facilities is available to providers without charge, as the system is largely underwritten through the participation of manufacturers and distributors. Hospitals are encouraged to periodically review and update their HIN assignments, as well as to request additional assignments for locations that have not yet been enumerated with a HIN. The process can be initiated by:






Phone: 1.877.GETHINS (1.877.438.4467)
 Fax: 1.602.381.1093
 E-Mail: gethins@hibcc.org
 Web: www.hibcc.org

Without a HIN

1 Hospital, 1 Buying Location

Has a unique Customer Number with each supplier



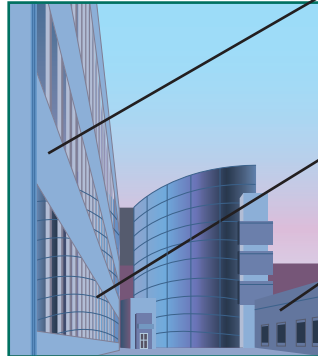
- #4567-AC5  M/S distributor
- #HJ2345B-54  Rx distributor
- #765724435  Vendor 1
- #21DS-1  Vendor 2
- #ERTE346  Vendor 3

Without the HIN: Multiple suppliers delivering to multiple locations requires the maintenance of thousands of proprietary numbers and continual maintenance — a time and resource consuming task.

Without a HIN

1 Hospital, Multiple Buying Locations

Has many Customer Numbers with the same or different suppliers



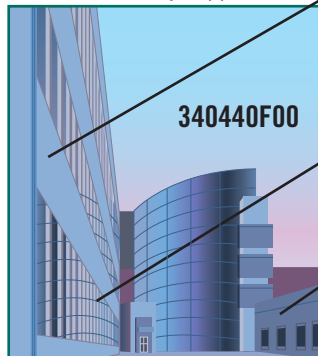
- | Supplier | Customer Number | Supplier Type |
|------------|-----------------|-----------------|
| Pharmacy | #32435-AC5 | M/S distributor |
| | #981660035 | Rx distributor |
| | #JL2435B-54 | Vendor 1 |
| | #169-1 | Vendor 2 |
| Laboratory | #44635A | Vendor 14 |
| | #32435-AC5 | M/S distributor |
| | #769584437 | Vendor 22 |
| | #IRN346 | Vendor 3 |
| Purchasing | #32435-AC5 | M/S distributor |
| | #86675-1 | Vendor 7 |
| | #9E133883E | Vendor 9 |
| | #34H | Vendor 8 |
| | #1589-1 | Vendor 10 |
| | #169-1 | Vendor 2 |
| #IRN346 | Vendor 3 | |

Without the HIN: Each hospital must establish and maintain different customer identification numbers for each supplier (above) and for each ship-to location within their facility.

With a HIN

1 Hospital, Multiple Buying Locations

Uses the same customer identification number with every supplier



- | Supplier | Customer Number | Supplier Type |
|------------|-----------------|-----------------|
| Pharmacy | 340440FFV | M/S distributor |
| | | Rx distributor |
| | | Vendor 1 |
| | | Vendor 2 |
| Laboratory | 340440FG7 | Vendor 14 |
| | | M/S distributor |
| | | Vendor 22 |
| Purchasing | 340440FGE | Vendor 3 |
| | | Vendor 7 |
| | | Vendor 9 |
| | | Vendor 8 |
| | | Vendor 10 |
| | | Vendor 2 |
| | Vendor 3 | |

What changes? The last two characters.

With the HIN: Utilizing the HIN, a hospital and its many suppliers communicate using a common and consistent view — streamlining the administrative process.

HIBCC Addresses Questions on the FDA's Proposal for Unique ID for Medical Devices

HIBCC was developed by the healthcare industry, and our efforts reflect the stated needs and interests of our constituents — the suppliers of medical goods and the providers of medical care. Our proposals are the product of these efforts which have already been implemented on a global scale.

In 2006, the US Food and Drug Administration (FDA) began deliberations on a proposed regulation for labeling of medical devices. The regulation was a follow-up to their 2004 mandate which required the use of bar codes on all pharmaceutical products.

After circulation of a draft proposal during which the industry was asked to comment, the FDA is continuing its review of current processes and technologies. A final proposal is anticipated sometime during 2007.

The following was prepared to assist the industry as it considers forthcoming legislation.

WHY IS UNIQUE MEDICAL IDENTIFICATION NECESSARY?

Automated processes, such as standardized product identification, have proven highly effective for reducing error and improving efficiencies in many industries. In healthcare, the potential benefits have even greater significance. A standardized system for unique device identification (UDI) such as that being considered by the FDA, has tremendous potential for supporting cost containment and patient safety practices.

For suppliers, UDI will enable consistency and efficiency of processes, enhance full-cycle supply chain management from manufacturing to end-user delivery, and improve track and trace protocols in the event of product recall.

The benefits to providers include improved patient safety through secure product identification and efficient traceability, and greater ability for monitoring expenditures and reimbursements.

ARE THE CURRENT SYSTEMS BEING USED FOR MEDICAL DEVICE ID APPROPRIATE?

Absolutely. In the mid-1980's, the healthcare industry recognized the need for developing a system of standards that would address the unique security concerns of medical product identification. Existing retail standards were considered by some to be inadequate as they are based on all-numeric, point-of-sale transactions, and thus failed to allow millions of alphanumeric identifiers. This limitation required costly and risky translation processes. HIBCC standards were thus developed based upon an alphanumeric format that allows for direct and literal encoding of product information. For medical devices this is especially critical as many product identifiers and serial numbers contain both alpha and numeric identifiers.

The healthcare industry was not unique in its concern. Many industries where considerations for consumer safety and sensitivity to error are essential, such as aviation, automotive and blood banking, also rely upon alphanumeric based standards.

WHAT TECHNOLOGIES ARE VIABLE?

There are many technologies that can accommodate serial numbers, including traditional linear bar codes, two dimensional (2D) symbols such as Data Matrix, and of course radio frequency identification (RFID).

SHOULD THE PHARMACEUTICAL INDUSTRY SERVE AS A MODEL?

The guidelines set forth by the FDA regarding identification of pharmaceutical products are important for several reasons. First, they provide clear direction and guidance to the industry and set in motion incentive for the industry to adopt important technology and practices. Second, the requirements provide continuity by specifying existing and internationally recognized standards for product

identification. And third, within this framework, they allow for flexibility of choice of identifiers. The FDA recognized the importance of the alphanumeric HIBC standards to the industry in its regulation.

SHOULD THE IDENTIFICATION SYSTEMS AND STANDARDS BEING DEVELOPED BE THE SAME FOR BOTH?

It is absolutely critical that government regulations support existing healthcare standards. These standards have been long established, are proven and are in practical use by healthcare participants. What is important now is developing incentive for further integration by all parties in the supply chain.

WHAT CHALLENGES DO HOSPITALS FACE?

There are no significant technical or practical barriers to implementation provided that existing international standards are required.

Regulations should be relatively straightforward and should not be made overly complex as a consequence of onerous requirements. Technology creep, as in any industry, can overly complicate what can be very simple processes. Any regulation should define current capabilities, consider what are likely to be needs in the future and weigh the cost benefit of complex processes such as serialization.

IS THIS A GLOBAL ISSUE? IS ONE REGION OR COUNTRY AHEAD OF THE REST?

Patient safety and cost containment are critical issues in any language, and product identification goes a long way toward reducing these risks. The efforts of international standards organizations such as ISO and ISBT have already addressed issues related to global harmonization for identification and the FDA should be building upon these successful efforts.

WHAT NEEDS TO BE DONE?

Implementation, implementation. This is where the FDA can be of great benefit. The standards and systems exist and are effective when used.

WHAT IS HIBCC PROPOSING?

HIBCC was developed by the healthcare industry, and our efforts reflect the stated needs and interests of our constituents — the suppliers of medical goods and the providers of medical care. Our proposals are the product of these efforts which have already been implemented on a global scale.

HOW HAVE THESE IDEAS BEEN RECEIVED AROUND THE WORLD?

The HIBC standards have been implemented by thousands of companies from every region of the world, representing small manufacturers to multi-nationals. Many of the largest US exporters that supply a vast percentage of total product worldwide have implemented HIBCC. The success of the HIBC standards is based upon two critical factors: first, the preference by these companies for alphanumeric identifiers. And second, the global consistency of the HIBC standards. The HIBC data structure is standardized no matter what region of the world it is applied.

WHAT DO YOU PREDICT WILL HAPPEN IN THE NEXT TWO YEARS? FIVE YEARS? TEN YEARS?

There is no doubt that technology integration has been recognized by the industry as a powerful tool. The extent to which new technologies are integrated depends largely on how the marketplace learns to leverage them. Over the next two years, there will be an increasing use of 2D symbols, particularly for small packages at the unit-of-use, and also etched onto metal surfaces for some medical devices, such as surgical instruments. Within five years, there will likely be increased use of RFID within “closed loop” (internal) systems. And over a period of ten years, barcoding and 2D symbols will co-exist as alternative technology options for healthcare participants to choose. Barcodes and 2D will continue to represent a low cost option that delivers significant ROI for many applications. ■



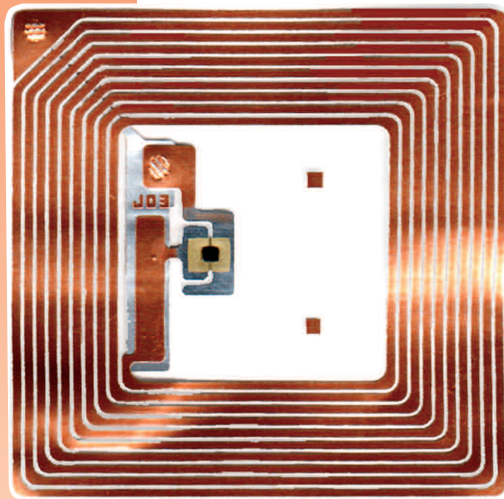
TECHNOLOGY

What is RFID?

Radio Frequency Identification (RFID) is a technology that uses electronic chips embedded on tags to transmit radio waves. These tags can identify products, assets, medical records, and even individuals with embedded security cards or wristbands.

RFID may thus have the potential to help healthcare facilities improve patient safety and reduce costs. Early adopters of RFID are utilizing it to track medical devices, drugs, staff, and patients.

A tag may contain information about products or people, their physical location in real time, and other information such as lot number and expiration date for medical supplies and drugs, patient allergies or blood type, and much more.



When transmitted to a “reader” within the facility, the information can be stored in a database or used by staff.

In the past, most healthcare facilities have kept track of their various resources and patients manually, or through the use of barcoding. RFID is a tool that can further enhance and augment these efforts.

What Benefits Can it Deliver?

Proponents of RFID cite many potential advantages over existing and conventional Auto-ID technologies, such as barcoding, that can improve supply chain and other processes. For example:

- Barcode labels are “read only,” while RFID tags can have both read and write capability, making them more versatile.
- Unlike barcode scanning, which requires that labels be individually read, groups of RFID tags can be read simultaneously, thereby enhancing productivity.
- Using “smart shelves,” which have RFID readers embed-

ded within them, it will be possible to obtain real-time inventory status by using RFID tags.

- The U.S. Food and Drug Administration (FDA) is evaluating the use of RFID tags for verifying product pedigree. This can be accomplished by encrypting information in the tag to eliminate counterfeiting of products, such as drugs and high-cost medical devices.
- Critical data, such as temperature monitoring for sensitive products like blood, can be automatically logged using RFID tags.
- RFID tags allow for invisible and resistant marking for special applications, such as wristbands.
- Unlike barcoding, there is no line of sight required to read an RFID tag.
- The use of RFID tags permits reading orientation directly through materials like boxes and textiles.

Some proponents have suggested extremely broad possibilities for RFID, such as the creation of an “Internet of things,” in which “every single object would be connected to the Internet through a wireless address and unique identifier.”

Given the well-established track record of barcoding, a more realistic perspective for RFID is that its potential for productivity improvement will be greatest in those areas in which barcode technology has limitations.

Will RFID Live up to Expectations?

Although there are potential longterm benefits of RFID, it appears that widespread adoption of the technology for supply chain applications is still a long way off. This may even be true in the retail industry, where large companies, such as Wal-Mart, have already invested considerable capital in RFID projects.

Several industry wide investments will be necessary prior to wide-scale implementation. These include systems design and engineering, systems integration, business process redesign, and logical IT data management integration. Furthermore, given the current costs of the tags themselves, adequate return on investment is indicated in only select applications.

Nevertheless, there are some promising short-term applications for RFID, and successful implementation with business benefits is likely where certain conditions are met. For example:

- “Closed-system” applications where productivity and working capital improvements for an individual company’s internal processes can result.
- Specialized, high-cost equipment, where reduced loss and obsolescence may lead to significant financial benefits.
- High-cost items or applications that require a high degree of traceability. These items include medical devices such as pacemakers, defibrillators, and other implanted prostheses.

Limitations of RFID

There are a number of challenges posed by RFID implementation in healthcare:

COST. RFID is still expensive, not plug-and-play, and has not yet proven its reliability in large-scale implementations.

ENVIRONMENTAL CONDITIONS. Tag reliability can be impacted by humidity, metal surfaces, and more. Current RFID tags cannot withstand extreme temperatures without temperature resistant housing. For that reason, using them for items like surgical instruments is complicated.

LIMITED APPLICATION. It is difficult to apply and read RFID tags on metal and fluids. This currently limits tag application to cardboard, paper and plastic packaging.

TECHNOLOGY INCOMPATIBILITIES. Interoperability between different RFID standards—for example, the ability for a single reader to read tags from multiple frequencies—is not available at this stage, and will be technologically difficult to achieve.

Applications in Healthcare

RFID applications in healthcare could include:

- Supply chain applications. This includes high-cost items like pacemakers, defibrillators, and artificial joints. The supply chain for these items is complex, and they are often supplied on consignment.

They also require a high degree of traceability from the supplier to the patient.

- Patient safety applications. This may include improved patient identification using RFID tags in patient wristbands.
- Quality assurance applications. This may include improved instrument tracking for infection control purposes. Some vendors supply RFID-enabled trays that can be tracked through central sterilizing departments.

Will RFID Supersede Barcoding?

Barcoding will continue to be used in the future, and will co-exist with RFID. As with all technologies, each will be utilized in the functions for which it offers the highest benefit/cost ratio and comparative advantage.

Consideration of the following will help determine which technology is used:

- The marginal cost of including a barcode on a product label. For low-cost items sold in high volumes, barcoding is still a viable and cost-effective option.
- There will always be applications that do not require many items to be read simultaneously. In these cases, RFID offers only a small benefit over barcoding.
- Barcoding is a mature technology, and its scanning reliability is well proven in broadscale implementations. By contrast, RFID is relatively immature, and is yet to be proven in widespread usage.
- Because some members of the supply chain may not have the capability to implement RFID, a second means of identification would need to be applied to all RFID-tagged products. This is not necessary for barcoding or other 2D options.

Current RFID Standards

RFID is a complex technology that includes many components, each requiring standardization to achieve interoperability. And, because there are

numerous standards that are related to RFID, they can be confusing. However, they all fall into two broad categories:

- Standards that relate to the air interface, or transmission frequencies and parameters for communication between the RFID reader and tag; and
- Standards that relate to data and applications for RFID systems.

The leading worldwide organization that oversees these standards is the ISO/IEC (International Organization for Standardization/International Electrotechnical Commission).

HIBCC RFID standards and recommendations are designed to be consistent with ISO/IEC standards.

RFID Resources

HIBCC provides an RFID Resource Center from its web site available at www.hibcc.org. Included in the RFID Resource Center:

Using HIBC Standards with RFID: An Implementation Guideline, detailing the requirements for utilizing the HIBC Supplier Labeling Standard with RFID technology;

Understanding RFID in Healthcare: Benefits, Limitations and Recommendations, a comprehensive and practical guide to RFID technology, its potential in healthcare and the cost implications of implementation;

Articles and announcements from other industries regarding trends in RFID.

Requests for publication copies of materials can be made to the HIBCC office at: 602.381.1091 or via email at: info@hibcc.org. ■

PATIENT SAFETY

continued from page 5



Devices can read and redisplay information in an easier to read format...

Records may be truncated after the last field that is implemented to reduce symbol size.

By using the tag structure, the messages are 'embeddable'. The messages must be human readable. Although most implementations are likely to use 2D symbols, the standards focus on the data, not the media. 2D symbols, RFID chips, wired and wireless media may be used to convey the data.

The goal of having an "electronic label" is attainable using the standards. A patient wristband can contain only a patient id number; or it can contain name, age, physician, and other information. The photo of an insulin vial accompanying this article shows a set of symbols for drug identification that contains the full drug name, NDC number, drug amount and total volume, lot number and expiration date.

Infusion pump medication administration can fully involve all areas of the standard. The employee badge identifies the employee to the pump.

The patient wristband associates the patient to the pump. The IV medication symbol communicates patient information, drug information and dosing instructions to the pump. A device license plate on the pump enables workflow devices such as PDA's to link to the pump to download log information. It is important to remember, however, that no matter how much information is communicated to the infusion pumps via the data, it is still 'best clinical practice' to require clinician review and positive acknowledgement before the medication is administered.

The implementation of wireless networks is growing in healthcare. This provides opportunities for infusion pumps to verify against the ordering systems that medication orders are still active/appropriate. A "bar code" system provides a backup system for caregiver validation when the network is down. It can also provide a low-cost alternative to a wireless implementation, or the ability to pilot use of the 'smart pumps' for a safety initiative before an expensive wireless infrastructure is available. Non-network connected devices can read and redisplay information in an easier to read format, and perform checks such as matching a patient to a patient-specific medication.

Although patient wristbands and employee badges are fairly simple, medication identification and their administration instructions are not. It is most significant that the data in the symbol can convey an NDC number, private drug alias, the drug name, strength or concentration, dose form and route information. If you scan the AZTEC symbol on the cover, you can see an example of an IV medication order.

SPECIFICATION TO STANDARD

Upon completion of the standards and review with early stakeholders, Partners Healthcare conveyed the standards to HIBCC in recognition of HIBCC as

a focal point for creation of healthcare data interchange standards. The Auto ID Technical Committee (AITC) members and HIBCC staff worked together to revise and re-format the documents in preparation for public review and ANSI approval.

IMPROVED SAFETY AND THE 'BOTTOM LINE'

Implementing the standards can expedite and facilitate implementation of patient safety initiatives for safe medication delivery. This will make hospital patients more satisfied customers and the hospital caregivers more confident that they are providing safer care.

Payors are increasingly looking at safety initiatives, and rewarding institutions as they implement them. Medication safety initiatives seem to be most favored by payors at this time.

EARLY ADOPTERS

Sigma embraced the standards early in the development process and is expected to ship their IV bar code 'smart' pumps later this year. Smiths Medical allowed modifications of their pump management software to read both the original chemotherapy pump bar code and the 2D symbols of the standards and this software is in use today. A few other large pump manufacturers have developed bar code pump systems but their symbol content is not as advanced as the HIBCC standards. Intermec added the Aztec symbology to their printer line as a result of our work on this project.

Two drug repackagers are in the process of implementing 2D symbols on IV and unit dose medications. ■

FOR MORE INFORMATION

The provider community is encouraged to review and comment on the draft standard and to participate in the development process. An initial draft is expected to be posted in early June 2007. For more information please contact the HIBCC office at 602.381.1091 or via email at: info@hibcc.org.

ABOUT THE AUTHORS

Harry Manolopoulos is the principal author and technical architect of the standards. He is a member of the AITC and has served on other HIBCC committees in the past. He provides bar code consulting to healthcare and develops MiSim software applications. You can reach him at hmanolop@neo.rr.com.

Sheri Hudson is co-author of the standards and an Information Technology professional at Northwestern Memorial Hospital in Chicago, IL. She is also an AITC member. You can reach her at shudson@nmh.org. ■

PRODUCT TRACKING

Healthcare's Preferred System for Product Identification & Tracking

In 1983 the healthcare industry determined that existing bar code standards were inadequate for the specific applications and needs of a healthcare environment. The existing standards were based upon the point-of-sale, "cash register" needs of retailers who did not have patient/consumer safety concerns.

HIBCC's mission was to design a specialized, yet fully interoperable, bar code labeling standard based upon the critical requirements of a health care environment.

The Health Industry Bar Code (HIBC) System is a result of these efforts. Here's what makes it the preferred standard for healthcare—

- + Alphanumeric Character Set** — The HIBC Standards utilize an alphanumeric character set. This allows for literal encryption of a manufacturer's existing product identifiers into a bar code data structure, eliminating the need for translation of alpha characters into numeric signifiers.
- + Variable Length Data Structure** — The variable length data structure allows the manufacturer to incorporate current product identifiers without having to truncate or pad digits.
- + No Risk of Duplication** — The 36 alpha and numeric characters combined with the flexibility of a 1–13 digit variable length format, provide an almost infinite set of identifiers — over 75 quintillion (mathematically defined as 75 million trillion). This virtually eliminates the possibility of duplicate identifiers in the same database.
- + Consistent on All Packaging Levels** — The HIBC data structure is consistent for every package level of a product, whether it is a unit-of-use or a pallet load. Different levels of product are specified within the 'level of packaging indicator' field with manufacturer assigned characters. This simplifies and reduces the risks in building software systems to scan the bar codes. When tracking and traceability for the purposes of recall are at issue, this streamlining is both critical and essential.
- + Globally Compatible** — The HIBC data structures are the same everywhere in the world. There are no regional variances. This enables implementation of secure and efficient tracking processes in both domestic and international markets.
- + Secure Link Characters** — For many medical and pharmaceutical products, especially implant devices, a primary bar code (product identifier) and a secondary bar code (serial number) are required. During the manufacturing process the primary symbol will be structured and labeled first, with the secondary symbol labeled at the end of the assembly.
Only the HIBCs have a 'link' character to prevent the wrong serial number from being matched up with its product identifier. This is a critical feature for ensuring the security and reliability of tracking processes and their extension into the hospital environment.
- + Embedded Data Check Characters** — All HIBCs have data check characters to verify the accuracy of the information encoded in the data structure. Check characters also guarantee that the data messages have not been corrupted during transmission. This prevents errors in the scanning of product identifiers and secures the process of product tracking.
- + Achieves Interoperability** — The HIBC system of standards provides for the identification of medical products and for all health care applications, including the identification of: patients, clinicians, specimen/tissue samples, pharmacy prepared medications, X-Ray films, medical records, facility locations, transplant organs and surgical instruments. These standards enable consistent implementation of the data capture and verification process and facilitate complete interoperability in a networked hospital environment.
- + Technologically Advanced** — HIBC Standards specify the use of 2-D symbologies, such as Data Matrix and PDF-417, for small device and instrument marking. Both small space symbols have been widely implemented and are supported by readily available technologies. Data Matrix is currently in use within the aerospace and automotive industries for critical parts identification and tracking.
Health care products have unique requirements that are especially well suited to the use of small space symbols. Data Matrix is the only symbol that can be etched directly onto a device and read reliably. It is currently used for marking implantable devices and surgical instruments, providing a more durable and less costly alternative to traditional labeling. ■

STAY INFORMED: BECOME A MEMBER

Corresponding Memberships are designed to allow individuals to stay on top of HIBCC activities and serve on various technical committees. Members under this category receive our quarterly periodical *LINES*, and are able to attend HIBCC Technical Committee meetings or purchase HIBCC publications at discounted prices.

Dues for Individual Affiliations are \$150 (U.S.) annually.

Corporate Memberships are available to organizations that wish to support HIBCC efforts and stay abreast of industry activities. Registered employees under this category receive our quarterly periodical *LINES*, are able to serve on various technical committees, and purchase HIBCC publications at discounted prices.

Dues for Corporate Affiliations are \$2,500 (U.S.) annually.

Name _____

Title _____

Organization or Company _____

Address _____

City/State/Zip _____

Telephone _____

E-mail Address _____

Membership Type: Corresponding @ \$150 (U.S.) per year
 Corporate @ \$2,500 (U.S.) per year

Industry Segment: Health Care Facility Manufacturer
 Distributor GPO

Please charge my: Visa MasterCard
 American Express

Card Number _____

Expiration Date _____

Card Holder Signature _____

Name as Shown on Card _____

QUESTIONS?

Contact HIBCC at 602.381.1091 or info@hibcc.org.

HIBC LABELING

The following manufacturers and distributors have implemented the HIBC Labeling standards for their products.

These organizations have demonstrated their support of HIBCC's goal of implementing auto-ID technology and achieving health care improvement.

We applaud these organizations for their commitment to their customers, the industry, and patient safety.

Australia

Depuy Australia Pty Ltd
 Medical & Surgical Requisites
 Smtih & Nephew Surgical
 Southern Dental Industries
 Thermo Electron Corp
 Willam A. Cook Australia Ltd.

Austria

Bender MedSystems GmbH
 Dentalwerk BURMOOS GmbH

Belgium

3M Europe
 Centeon Benelux N.V.
 Cilag N.V.
 GC Europe N.V.
 Johnson & Johnson International
 Menarini Benelux S.A./N.V.
 Molnlycke Europe S.A.
 Schering-Plough B.V.

Brazil

Johnson & Johnson
 Produtos Prof.

Canada

ECI Medical Technologies Inc.
 Johnson & Johnson
Iolab Canada Inc.
Janssen Pharmaceutica Inc.
Johnson & Johnson Medical
McNeil Pharmaceutical
Ortho Diagnostic Systems
Ortho Pharmaceutical Corp.
 Numed Canada Inc.
 PriMed Instruments
 Primeline Medical Products, Inc.
 The Westaim Corporation
 Vivosonic Inc.
 Zimmer Inc.
Arthroscopy Systems
Astel
Medical Engineering
S&G Implants GMBH
Zimmer Ltd.

HIBCC LABELS HERE

China

Johnson & Johnson Medical

Denmark

Coloplast A/S
Contura International A/S
Radiometer Medical A/S

Finland

Bionix Implants OY
Inion Ltd.
Kolmi-Set OY
Mediala OY
Sataside OY
Tyke-Tuote

France

ATF-Vitatech
Becton Dickinson France
Benoist Girard et Cie S.A.
Bioland
Biomatlante
Biomerieux S.A.
Corneal Industries
Dentsply France SAS
Ethicon SAS France
Ethnor S.A. France
Group Lepine
Hexacath SARL
Helioscopie-Ceerdil
Hospal International
Ioltech Laboratories
Johnson & Johnson Medical
Landanger-Landos
LDR Medical
Medicrea
Micro-Mega S.A.
New Deal
Pierre Rolland
Sarl Biomatlante
Satelec
Sofradim Production
Surfix
Tornier

Germany (Deutschland)

Abbott Vascular Instruments
Aesculap A.G.
B. Braun Melsungen A.G.
B. Braun Surgical GmbH
BEGO GmbH & Co.
Beiersdorf Inc.
Bosch & Sohn GmbH & Co.
Chem. Pharmazeutische
Dentaurum J P Winkelstroet
Dentsply GmbH
Dr. Jean Bausch KG
E. Hahnenkratt GmbH
ESPE Dental-Medizin GmbH
Espirdent GmbH
Ethicon GmbH Germany
Fotochemische Werke GmbH
Girrbach Dental GmbH
Heraeus Kulzer GmbH
Howmedica GmbH
Howmedica Leibinger GmbH
Johnson & Johnson Medical
Karl Storz - Endoskope
Lohmann GMBY & Co.
Merz + Co.
Merz Dental
Noba Berbandmittel Danz
GmbH
Orochemie Durr + Pfug GmbH
PVB Medizintechnik GmbH
Renfert GmbH
Resorba Chirurgisches Naht
Richter & Hoffman Harvard
ROEKO GmbH + Co.
Scheu-Dental
Serag-Weissner GmbH
Tiolox Implants GmbH
Vita Zahnfabrik

Hungary

De-Puy Sanatmetal Mfg.

Ireland

Abbott Vascular Devices
Abbott Ireland Limited
Allergan
Howmedica International Ltd.
Howmedica International Inc.
Fujisawa GmbH
Johnson & Johnson Prof.
Products
Mednova
Proxy Biomedical Ltd.

India

Johnson & Johnson Ltd.
Ethicon Division

Israel

Medinol Ltd.

Italy

Biotek SRL
Critikon—Johnson & Johnson
DiaSorin S.R.L.
Dideco SpA
Gambro SpA
Johnson & Johnson
Medical Holdings, SpA
Kerr Italia SpA
LIMA-LTO SPA
MD & I SRL
MedicalPlastic S.R.L.
RS Medica SRL
Sorin Biomedica Cardio SpA

Japan

GC Corporation
Fuji Photo Film Company Ltd.
Konica Corporation
Terumo Corporation

Korea

U & I Corporation

Liethenstien

Ets Vivadent
Ivoclar A.G.

Mexico

Mallinckrodt Medical Inc.
Mallinckrodt Medical TPI

The Netherlands

Abbott B.V.
Academisch Zkh. Maastricht
Alcon Pharmaceutical Ltd.
Astra Pharmaceutical
Products Inc
Bayer Nederland B.V.
Bipharma B.V.
Boehringer Ingelheim B.V.
Boots Pharmaceuticals B.V.
Bournonville-pharma B.V.
Brocacef B.V.
Brocacef B.V.
Bufa - Chemie B.V.
Byk Nederland B.V.
Centrafarm
Central Lab V.d.
Bloedtransfusiedienst
Christiaens B.V.
Dg Lederle Nederland B.V.
Dumex B.V.
Duphar Nederland B.V.
E Merck Nederland B.V.
Eli Lilly Nederland B.V.
Farmaceutische Ond.
Lansbergrotterdam
Genfarma
Gist Brocades
Glaxo B.V.
Guerbet Nederland B.V.
Handelonderneming
Tempus B.V.
Hoehst-holland N.V.
Ici-farma
Inpharzam/Zambon
Nederland B.V.
Interpharm B.V.
Janssen Pharmaceutica B.V.
Johnson & Johnson Medical B.V.
Kabi Pharmacia B.V.
Katwijk Farma B.V.
Knmp
Knoll B.V.
Koninklijke Utermohlen N.V.
Lundbeck B.V.
Magnafarma B.V.

Mecomfa B.V.
Medicopharma N.V.
Merck Sharp & Dohme B.V.
Multipharma
Novo Nordisk Farma B.V.
Npbi B.V.
Onderlinge Pharm
Groothandel U.A.
Ortomed B.V.
Parke-Davis B.V. Division
Warner Lambert
Pfizer B.V.
Pharbita B.V.
Pharmachemie B.V.
Polyfarma B.V.
Rhône-poulenc Rorer/Pharbil
Roche Nederland B.V.
Rooster & Zn. B.V.
Samenwerkende Apothekers
Nederland
Sandoz B.V.
Sanofi B.V.
Schering Nederland B.V.
Searle Nederland B.V.
Smithkline Beecham Farma
St. Volksgez En Milieuhygiene
Stephar B.V.
Stephim B.V.
Taxandria Pharmaceutica B.V.
Tramedico B.V.
Upjohn Nederland - Ede
Van Den Berg Nederland B.V.
Wellcome Pharmaceuticals B.V.
Wyeth Laboratoria B.V.
Zyma-nederland B.V.

New Zealand

Enztec Limited

Norway

Nycomed Imaging AS

Portugal

Johnson & Johnson
Produtos Prof.

Puerto Rico

Puerto Rico Hospital Supply Inc.

South Africa

Johnson & Johnson Medical
Ortho Sol (PTY) Ltd.

Spain

Howmedica Faimon S.A.
Howmedica-Iberica S.A.
Johnson & Johnson
Productos Prof.
Metalor Iberica

Sweden

Carmel Pharma AB
Gambro A.B.
LIC Hygien A.B.
Medscand Medical A.B.
NobelPharma

Switzerland

aBien-Air S.A.
Candulor A.G.
Central Labs Blood
Transfusion Svcs.
Coltene A.G.
Degradable Solutions AG
Hamilton Medical AG
Hospal Ltd.
Jaquet Orthopedie S.A.
Maillefer Instruments S.A.
Metaux Precieux S.A. Metalo
Precimed S.A.
Prodonta SA
Produits Dentaires S.A.
Schneider (Europe) A.G.
Swemac Orthopaedics AB
UGDO S.A.
UNOR AG
Valtronic

Turkey

Altera Tibbi Malzeme San. ve
Tic. A/S

United Kingdom

3M Health Care Limited
B Braun Melsungen Ag
Downs Surgical
BOC Health Care
Boc Health Care
Corin Ltd.
Critikon - Johnson & Johnson
Professional Products
Davis, Schottlander & Davis
Davis, Schottlander &
Davis Ltd.

Dentsply International Inc
Ash Instruments
C.M.W. Laboratories
Dentsply Ltd.
Detrey Dentsply Ltd.
Medical & Industrial Equip.
DePuy CMW
DePuy International Limited
Ethicon Ltd. United Kingdom
E-Z-EM Limited
Finsbury Orthopaedics
Howmedica (UK) Limited
Iolab Intraocular (J&J)
John Poulten Ltd.

Johnson & Johnson Medical Ltd.
Johnson & Johnson
Orthopedics Ltd.
Johnson & Johnson Cardiff
Wales UK
Lidco Ltd.
Metalor Dental Products Ltd.
Neoligaments Ltd.
Ohmeda Inc.
Orthodynamics
Plasma Surgical Limited
Portex
Portex Limited
Poulten & Graf Limited
Regent Hospital Products Ltd.
Sherwood Medical Int.
Smith & Nephew
Smith & Nephew plc
Sulzer Vascutek Ltd.
Summit Medical Ltd.
Synthes
Tissue Science Labs
T J Smith & Nephew Medical
Limited

United States

3M
3M Med/Surg
A-DecInc.
Aaron Medical Industries Inc.
Bovie Medical
Aastrom Biosciences
Abbott Laboratories
Abco Dealers Inc.
Ability One Corporation
Absorbent Products
Company Inc.

Ace Medical
Acme United Corporation
Acumed Inc.
Acute Biomedical Inc.
Adroit Medical Systems
Advance Medical Designs Inc.
Advanced Medical Optics
Advanced Biomaterial Systems
Advanced Meditech
International Inc.
Advanced UroScience, Inc.
A&E Medical Corporation
Aesculap Instruments Corp
AFP Imaging Corp
Dent-X Corp
AGA Medical Corporation
Agfa Corporation
Matrix Division
Air Techniques Inc.
All-Pro Imaging Corporation
Jelrus International
Corporation
Akzo Pharmaceuticals
Organon Teknika
Alba Health Products
Alcide Corporation
Alcon Laboratories
Allergan Inc.
Alliant Enterprises Inc.
Amcol International
Chemdal Corp
American Australian ME
American Cyanamid Company
Davis & Geck
American Dental Cooperative
American Dental Supply Inc.
American Home
Products Corp
Argyle Div of Sherwood
Medical
Dover Urologicals Div of
Sherwood
Monoject Div of Sherwood
Medical
Oxford Chemistries Div of
Sherwood Medical
Oxford Lab Supplies Div of
Sherwood Medical
Oxford Liquid Handling Div
Sherwood Medical
Sherwood, Davis & Geck

Veterinary Div of Sherwood
Medical
US Clinical Products
Wyeth-Ayerst Laboratories
Amersham Health
Amsino International Inc.
Anatomical Concepts Inc.
Angioscore Inc.
Anika Therapeutics Inc.
Anesthesia Medical
Specialties Inc.
Angeion Corporation
Angiodynamics
E-Z-EM Inc.
Angioguard Inc.
A-Plus International
Applied Medical Resources
Applied Spine Technologies
Apotheus Laboratories Inc.
Armour Pharmaceutical Co.
USV Laboratories Division
USV Pharma Corporation
Arrow International Inc.
Arrow Precision Products
Arterial Vascular Eng Inc.
Arthrex Inc.
Arthrotek
Aspen Surgical Products Inc.
Astra USA
Athena Champion
Atrium Medical Corporation
ATS Medical Inc.
Audit Microcontrols Inc.
Auric Enterprises
Diack
Austen Dental Inc.
Nobel Pharma USA
Automated Medical
Products Inc.
Automatic Liquid
Packaging Div
Healthcare Products Div
Avanti Systems Inc.
Avid Medical, Inc.
AXO Gen, Inc.
Bacchus Vascular
Bacharach Inc.
Bacterin International
Banta Healthcare
Baron Medical Corporation
Barriermed Inc.

Barriermed Glove Co.
Barrx Medical Inc.
Bausch & Lomb
Bayer Corporation
Agfa Division
Baxa Corporation
Baxter Healthcare Corporation
Midwest Textiles Inc.
B. Braun Interventional
Systems
B Braun Medical Inc.
Burron Mfg Div
B Braun Melsungen AG
Downs Surgical
Beckman Coulter Primary
Care Diagnostics
Beckman Coulter Inc.
Becton Dickinson & Company
Acutecare Division
Diagnostic Instrument
Systems
Immunocytometry Systems
Infusion Systems
Labware Division
Medical Glove Division
Medical Technique Products
Microbiology Systems
Pharmaceutical Systems
Vacutainer Systems
Beiersdorf Inc.
Jobst Institute
Beiersdorf Medical
Bel-Art Products
Maddak Inc.
Belpport Company
GingiPak
Bemis Health Care Inc.
Bemis Manufacturing
Company
Bergen Brunswick Corporation
Berkley Medical Resources Inc.
B G Industries Inc.
Biddle & Crowther Company
Biocompatibles
International PLC
Biocompatibles
Cardiovascular Inc.
Bio Compression Systems
BioDerm Inc.
BioForm Medical Inc.
Biolab Diagnostica S/AV

HIBCC LABELS

- Biological & Environ.
Control Labs
- Biomed Diagnostics Inc.
- Bio Medical Enterprises, Inc.
- Biomed Packaging Systems Inc.
- Bioplate Inc.
- Bio-Medical Devices Inc.
- Bio Plas Inc.
- Bio-Plexus, Inc.
- BioPro
- Bio-Rad Laboratories Inc.
- Bio-Rad Redmond Operation
- Biosculpture Technology Inc
- Bioseal Medical Packaging Concepts
- Biosearch Medical Products Inc.
- Biosphere Medical Inc.
- Biotrol International
Pro-Dex Inc.
- Birchwood Laboratories Inc.
- Blackstone Medical, Inc.
- Block Medical Inc.
- Blue Medical Devices BV
- Boehringer Laboratories Inc.
- Boekel Industries Inc.
- Boots-Celltech Diagnostics Ltd.
- Bound Tree Medical
- Boston Scientific Corporation
Advanced Bionics
Cardiac Assist
- Brennen Medical Inc.
- Breveon Inc.
- Bridger Biomed Inc.
- Briggs Medical Service Corp
- Brinkmann Instruments Inc.
Eppendorf Scientific, Inc.
- Buffalo Filter
- Bulbtronics Inc.
- Busse Hospital Disposables
- CHM Medical Products Group
- C R Bard Inc.
Bard Access Systems
Bard Canada Inc.
Bard Electrophysiology
- Bard Interventional Products*
Bard Medical Division
Bard Peripheral Technologies
Bard Urological Division
Daval Inc.
Impra Inc.
- Cabot Medical Corporation
Circon Corporation
- Carbomedics
- Cardica Inc.
- Cardinal Scale Mgf Co.
Detecto Scale
- Cardiogenesis Corp
- Cardiomems Inc.
- Cardiovascular Innovations LLC
- Careplus (M) SDN. BHD.
- Careside Inc.
- Carl Parker Associates Inc.
Dental Materials Group
Mydent Corp
- Castle Professional Services Inc.
Cardio Medical Solutions Inc.
- Centrix Incorporated
- Century Plastics
Mac-Lee Medical Products
- Cetylite Industries Inc.
- Chatsworth Latex Inc.
- Chesebrough-Ponds Inc.
Home Services Division
- Chester Labs Inc.
- Chiron Vision
- Chris-Craft Industrial Products
MD Industries Inc.
- Churchill Medical System Inc.
- Ciba Corning Diagnostics Inc.
- CIDA
- Cincinnati Surgical Company
- Circon Corp
Cabot Medical Corp.
- CIVCO Medical Instruments
- Clearmedical Inc.
- Clinical Innovations Inc.
- Clinical Instruments Int. Inc.
- Clinimed Incorporated
- Clinipad Corporation
- CMP Industries, LLC
- Coalescent Surgical Inc.
- Cobe Laboratories Inc.
- Coeur Medical US
Polyten LLC.
- Collagen Matrix, Inc.
- Coloplast Inc.
Coloplast A-S
- Coltene/Whaledent Inc.
- Columbia Diagnostics Inc.
- Compression Therapy Concepts
- Conceptus Inc.
- Conor Medsystem
- Consolidated Polymer Tech. Inc.
- Control Company
- Cook Group Inc.
Cook Biotech Inc.
- Cook Imaging
- Cook Inc.
Wilson-Cook Medical Inc.
Cook Urological
- Cooley & Cooley Ltd
- Cooper Biomedical Inc.
- Coors Ceramics Company
- Conmed Corporation
Aspen Laboratories Inc.
Andover Medical
Linvatec
Hall Surgical
- Corning Incorporated
- Cottrell, Ltd
Advance Suture Inc.
Alliance Western Mfg Inc.
Prochem Company
- CPAC
Allied Diagnostic Imaging
- Coaxia Inc.
- Coulter Corporation
Coulter Electronics
- Cretex
RMS Company
- Critikon Inc.
- Crosstex International
- Crosstrees Medical, Inc.
- Cryovascular Systems Inc.
- CSC Scientific Company Inc.
- Cura Medica, LLC
- Cure Medical
- Currie Medical Specialties Inc.
- Curtin Matheson Scientific Inc.
- Cygnus Inc.
- Cypress Medical Products, LP
- Cytogen Corporation
- Dade International
Dade Chemistry Systems Inc.
- Dale Medical Products Inc.
- Data Medical
- Datascope Corporation
- DCI International
- Decon Laboratories
- Delta Gloves
- Den-tal-ez Inc.
Star Dental
Customer Vacuum
Columbia Dentoform
- Denticator International Inc.
- Dentsply International Inc.
Ash Instruments Dentsply
Ash Instruments Div
Dentsply Ltd
Ash USA
C M W Laboratories
Ceramco Inc.
Dentsply Caulk de Mexico
SaDe CV
Dentsply Endodontics
Dentsply Equipment
Dentsply G M B H
Dentsply Industria E
Comerico Ltda
Dentsply Ltd
Detrey Dentsply Ltd
Prosthetics Division
Ransom & Randolph
Company
The L D Caulk Company
- Depuy Inc.
Orthopedic Technology Inc.
- Dermacare
Division of PSC Corp
- Deroyal Industries Inc.
- Deroyal Technologies Inc.
- Design by Norvell Inc.
Healthcare System by Body
- Drench
- Devax, Inc.
- Devon Industries Inc.
- Dexide Inc.
Quantum Instrument Corp
Nurse Assist
- Dey Laboratories Inc.
- Diack Inc.
- Difco Laboratories Inc.
- Dipro Diagnostic Products
- Dittmar Inc.
- DJ Orthopedics LLC
- Doctor Down, Inc.
- Dow Corning Corporation
- Drummond Scientific Company
- Dux Dental
- D W Technologies
- E & D Dental Products
- E I Dupont De Nemours
Dupont Critical Care/Med
Prod Dept
Medical Products Dept
- E-Z-EM Inc.
- Eastman Kodak Company
- Eclipse Medical
- Ekos Corporation
- EFOS Inc.
- Electromed, Inc.
- Eli Lilly & Company
Dista Products
Ivac Corporation
Physio-Control Corporation
- Emergency Medical Edu.
Tech Sys
- EMD Chemicals, Inc.
- EMD Chemicals, Inc.
Scientific Division
- Encore Medical LP
Encore Soft Goods
- Endius Incorporated
- Endocardial Solutions Inc.
- Endodent Inc.
- Endologix, Inc.
- Engineered Medical Systems
- Enochs Manufacturing Inc.
- Enterprise Systems Inc.
- Enzyme Industries Inc.
- Erie Scientific International
EverReady Thermometer
Company
- ESR Medical Products Group

Essential Dental Systems Inc.	General Glassblowing Company	<i>Personal Care Corp</i>	International Medical	Kendro Laboratory Products
Estech	Genetic Laboratories	Health Services Corp of	Research	Kensley Nash Corporation
Ethox Corporation	Wound Care	America	Interpore International	Kerberos Proximal
eV3	Gensia Laboratories, Ltd.	Hearten Medical Inc.	<i>Interpore Orthopaedics Inc.</i>	Kerr Corporation
Everest and Jennings	<i>Gensia Pharmaceuticals Inc.</i>	Heartport	Interventional Technologies Inc.	Kilcullen-Clayton Medical Inc.
Evergreen Industries Inc.	Genzyme Corporation	Heart Technology Inc.	Intraluminal Therapeutics	Kimberly Clark Inc.
Everest Medical Corporation	George Medical, LLC	Heart Ware Inc.	Intuitive Surgical Inc.	<i>Health Care Products Group</i>
Exactech Inc.	GFC Bridgeview Inc.	Hemosense Inc.	Iotec Industries	Kinetic Concepts Inc.
Exami-Gowns Inc.	<i>Derma Care Division</i>	Henry Schein Co.	<i>Dexide Inc.</i>	King Pharmaceuticals, Inc.
Excel Medical Products, LLC	Gibbons Surgical Corporation	Heraeus Kulzer Inc.	Irrimax Corporation	Kirschner Medical Corporation
Eyepx, LLC	Gillette	<i>Heraeus Kulzer Inc Dental Products</i>	Irvine Biomedical Inc.	<i>All Orthodontic Appliances</i>
EyeKon Medical Inc.	<i>Oral-B Laboratories</i>	Heuer Time & Electronics Corp	Isolyser Company Inc.	Kleen Test Products
E-Z-EM Inc.	Gimbel Glove Company, LLC	Hill-Rom Inc.	Isotis Orthobiologics	Klein-Baker Medical Inc.
Fenem Inc.	<i>Gimbel Medical Glove Co., LLC</i>	Horizon Surgical Inc.	Ivoclar Vivadent Inc.	K-Medic Inc.
Fine Surgical Instruments Inc.	Globe Enterprises Inc.	Hospira Inc.	J T Posey Company	Knoll Pharmaceutical Company
Fisher Scientific	Global Medical Products Inc.	Hospital Marketing Services Co.	Jaece Industries Inc.	Konica Corporation
<i>Chemical Manufacturing Division</i>	d/b/a <i>Tava Surgical Instruments</i>	Howard Medical Company	Jason Marketing Company	Kyphon Inc.
<i>Diagnostics Division</i>	Graphic Controls Corporation	Howmedica Osteonics	Johnson & Johnson	Lab-Line Instruments Inc.
<i>Instrument</i>	<i>Medical Products Division</i>	Hudson Respiratory Care Inc.	<i>Acromed Corporation</i>	Labconco Corporation
<i>Manufacturing Div</i>	Graseby PLC	Hu-Friedy Manufacturing Co.	<i>Advanced Sterilization Products</i>	Laborie Medical
<i>Private Label</i>	<i>Graseby Medical Inc.</i>	Huntington Laboratories Inc.	<i>Codman & Shurtleff Inc.</i>	Technologies Inc.
<i>Vendor Items</i>	Grieshaber Manufacturing	Huntleigh Technology Inc.	<i>Cordis Biot Division</i>	Lake Region Manufacturing Inc.
Florida Medical Industries Inc.	Co Inc.	<i>Huntleigh Healthcare Inc.</i>	<i>Cordis Miami Division</i>	Lakeside Manufacturing Inc.
Flow X-Ray Corporation	Guidant Corporation	Hy-tape Corp	<i>Cordis Roden Division</i>	Lamico Inc.
<i>Wolf X-Ray Corporation</i>	<i>Vascular Intervention</i>	Hycor Biomedical Inc.	<i>DePuy Mitek.</i>	Lang Dental Mfg Company Inc.
Flowmedica Inc.	<i>Cardiac Rhythm</i>	H W Andersen Products Inc.	<i>Ethicon Inc.</i>	Lares Research
Foremost Dental	<i>Management</i>	ICP Medical	<i>lolab Canada Inc.</i>	Leeder
Manufacturing	Guidant CVS	Imed Corporation	<i>Janssen Pharmaceutica Inc</i>	Leica
Foxhollow Technologies	GWR Medical, Inc.	Implant Innovations Inc.	<i>Johnson & Johnson Canada</i>	<i>Optical Products Div</i>
Fracturecare Products	Gynecare Inc.	Implex Corp.	<i>Janssen Pharmaceutical Inc.</i>	Latexx Partners Berhad
Fresenius Pharma	Gyrus ENT	Impra Inc.	<i>Johnson & Johnson Inc.</i>	Lidco Ltd.
<i>Fresenius AG</i>	Gyrx LLC	Independent Medical Coop	<i>Johnson & Johnson Medical</i>	Lifecell Corporation
Fujifilm Electronic Materials	<i>Endox LLC</i>	(IMCO)	<i>Johnson & Johnson</i>	Lifestream International Inc.
Fujisawa USA Inc.	H W Andersen Products Inc.	Infusion Devices	<i>Professional</i>	Life-Tech, Inc.
Fusion Medical Technologies Inc.	Hager & Werken	Infusive Technologies, LLC	<i>Lifescan Inc.</i>	Lighthouse for the Blind
Galileo Corporation	<i>Hager Worldwide</i>	Innerspace Corp	<i>McNeil Pharmaceutical</i>	Linvatec
Galt Medical Corp.	Harbor Medical Devices Inc.	Innerspace Inc.	<i>Canada</i>	<i>Hall Surgical</i>
Gamma Biologicals Inc.	Hard Manufacturing Company	Innomedica	<i>OMJ Pharmaceuticals Inc.</i>	Little Rapids Corporation
Gaymar Industries Inc.	Hardwood Products Company	Innovasive Devices Inc.	<i>Ortho Diagnostic</i>	Lohmann GMBH & Co.
<i>Medisearch PR Inc.</i>	Harry J Bosworth Company	Innovative Healthcare	<i>Systems Inc.</i>	<i>Carapace Inc.</i>
GC America	Havel's Incorporated	Inovise Medical Inc.	<i>Ortho/McNeil</i>	Lone Star Medical Products Inc.
GC Corporation	Hawaii Medical LLC	ID LLC	<i>Pharmaceutical Corp</i>	Lonestar Technologies LLC
G-F Health Products Inc.	Hayes Handpiece Co.	Integra Lifesciences	<i>Therakos</i>	Lorrex Health Products
Gelman Sciences Inc.	Health Care Logistics Inc.	Corporation	Jordco Inc.	L&R Manufacturing Company
Gendex Corporation	Healthcare Materials Network	Interflo Medical	Kareco International Inc.	Ludlow Technical Products
<i>Gendex Dental X-Ray</i>	Healthcare Products Plus	Intermed Inc.	Katena Products, Inc.	Lumend Inc.
<i>Gendex Europe</i>	Healthmark Industries Co.	International Business	KCI New Technologies Inc.	Maersk Medical Inc.
<i>Midwest Dental Products</i>	Health Link	Solutions	Keller Medical Specialties Inc.	Mallinckrodt Chemical Inc.
<i>Midwest Dental Products</i>	Health-Mor Industries Inc.	International Equipment Co.	<i>Kinetic Concepts Inc.</i>	<i>Mallinckrodt Baker Inc.</i>
<i>Private Label</i>			Kenad SG Medical Inc.	Mallinckrodt Medical Inc.
				<i>International Div</i>

HIBCC LABELERS

Mallinckrodt Diagnostic Products Div.
Mallinckrodt Anesthesia Products
Mallinckrodt Anesthesiology
Mallinckrodt Medical Inc.
 Mann Chemical Corp
 Maramed Orthopedic Systems
 Mark Clark
 Masimo Corporation
 Mason Tayler Medical Products Corp
 Matrx Medical Inc.
 Maxxim Medical
Nonwovens & Gloves
Sterile Trays,
Non-Sterile Kits
Diagnostics
 MBF USA
American Health Products Corp
 MCM Environmental Tech. Ltd.
 MD & I SRL
 Meadox Medicals Inc
Div of Boston Scientific
 Mecanica Inc.
 Medennium Inc.
 Medex Inc.
 Medical Instrument Development Labs, Inc.
 Medi-Dyne Inc.
 Medi-Flex Hospital Products Inc.
 Medical Action Industries Inc.
 Medical Chemical Corporation
 Medical Concepts Development Inc.
 Medical Designs LLC
 Medical Devices International
MDI Plasco Inc.
 Medical Illumination Int.
 Medical Infusion Technology
 Medical Inventors Corp
 Medical Laboratory Automation Inc.
 Medical Products Laboratories

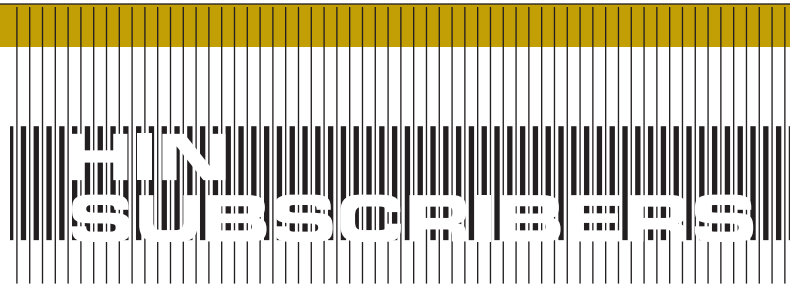
Medication Delivery Devices
 Medichoice (Owens & Minor)
 Medigroup Inc/Janin Group
 Meditech International Corp
 Medivest Inc.
 Medline Industries Inc.
 Medlogic
 Medtrex Inc.
 Medtronic, Inc.
Biotech International S P A
CAS Venture
DLP
Drug Administration Systems
Interventional Vascular
Neurological
Medtronic Bio Medicus
Medtronic Blood Systems Inc.
Medtronic Cardiopulmonary
Medtronic Inc (CPRA)
Medtronic Interstim Venture
Pacing Business Unit
Vascular Division
Vitatin Inc.
 Mentor Corporation
 Meridian Medical Systems Inc.
 Merit Medical Systems
 Merocel Corporation
Xomed
 Merz Dental GMBH
 Metrex Research Corporation
 Mettler Instrument Corporation
 MicroAire Surgical Instruments
 MicroMedics
 Micro Motors Inc.
 Micromed Technology, Inc.
 Microtherapeutics Inc.
 MicroVenton
 Micrus Corporation
 Midwest Textiles Inc.
 Miltex Instrument Company Inc.
 Milton Roy Company
Analytical Product Division
 Minrad Inc.

MLA Systems Inc.
 Modec Inc.
 Moore Business Forms Inc.
 Motloid/Yates & Bird
Bird-X Inc.
 Molded Products
 Mortan Inc.
 M-Pact Worldwide, LLC
 MPS Acacia
 MRLB International, Inc.
 Nanogen Inc.
 Nanoscale Materials Inc.
 National Distrib. & Contracting Inc.
 National Keystone Products Co.
Mizzy Inc.
 National Standard Company
Medical Products Division
 NDM-New Dimensions In Medicine
 Neo Devices, Inc.
 Neptune Products Inc.
 Neucoll
 Neuhaus Laboratories Inc.
 Neurorecovery
 Neurovasx Inc.
 Newell Rubbermaid Inc.
 Newtex Industries Inc.
 Nexcore Technology
 Nexus Medical LLC
 Nice-Pak Products
Professional Disposable Inc.
 Niche Medical
 Ni-Med Inc.
 Nordent Manufacturing
 Norian Corp
 Norma Tec Inc.
 North Coast Medi-Tek Inc.
 Northeast Scientific, Inc.
 Norton Company
 Novoste Corporation
 NuMed Inc.
 Oasis Medical
 O-Two-Systems International
 Ohaus Scale Division

Olson Medical Sales Inc.
PSC of Kentucky
 Omega Medical Products Corp
 Omega Surgical Instruments Inc.
 Omni-Flow Inc.
 Omni International, LLC
 Omnisonics Medical Technologies
 Omnifix Industries Inc.
 Ongoing Care Solutions
 Ophthalmic Innovations International Inc.
 Opus Medical Inc.
 Optical Radiation Corporation
 Opticon Medical
 Ora Innovations Inc.
 Orbus Medical Technologies Inc.
 Origin Medsystems Inc.
 Ortho Development Corporation
 Orthofix Inc.
 Orthopedic Systems Inc.
 Oscor, Inc.
 Ostex International Inc.
 Owens-Illinois Inc.
Owens Brigam
Owens-Illinois Health Care Group
 Pacific Hemostasis
Curtin Matheson Scientific Inc.
 Packaging Services Corp. of Kentucky
Q2 Medical
 Pall Corp
Pall Biomedical Products Co.
 Palmero Health Care
 Pascal Company Inc.
 Patterson Dental Company
 PDI/Professional Disposables International
 Pearson Dental Supply
 Peerless International Inc.
 Perclose Inc.
 Perfecseal
Medi-Plus
 Perigon Medical Distribution Group
 Pfizer Hospital Products Group
American Medical Systems Inc.

Howmedica Inc.
Schneider USA
Valleylab Inc.
 Pharma-Plast Inc.
Pharma-Plast Denmark
Pharma-Plast USA
 Philips Medical Systems
 Picker International
 Pilling Weck
 Pinnacle Products Inc.
 Plastek Industries Inc.
 Plasti-Products Inc.
 Poly Vac
 Polyten LLC
 Pope Scientific
 Porex Technologies of Georgia
Porex Surgical Inc.
 Porton Diagnostics Inc.
Porton International PLC
 Pouch Support Systems Inc.
 Power Medical Intervent
 Practicewares Dental Supply
 Precision Dynamics Corp
 Precision Laboratory Plastics Inc.
 Precision Scientific Inc.
 Precision Systems Inc.
 Precision Vascular Systems
 Premier Dental Products Co.
 Premium Plastics Inc.
 Presby Corp
 Preventive Technologies
 Principle Industries, Inc.
 Professional Care Products
 Professional Hospital Supply Inc.
 Professional Medical Products
 Professional Products Inc.
Government Sales Div
 Professional Tape Company Inc.
Time-Med Labeling Systems
 Prograft Medical Inc.
 Progressive Dynamics Inc.
 Proma Inc.
 Propper Manufacturing Co. Inc.
 Protocol Systems Inc.
 PSS World Medical
 PT. Eka Wira Asia
 Puerto Rico Hospital Supply
 Pulmonetic Systems, Inc.
 Pulpdent Corporation

Pymah Corporation <i>ATI Division</i>	<i>Mitsubishi Kasei America Inc.</i>	Staco Energy Products Company	<i>Nalge Nunc Company Panorama Plastics Sybron Endo Sybron Lab Products Group Thermolyne Corporation</i>	Tri-Ject International Corp Trimedyne, Inc. Trinity Sterile Inc. Tri-Star Ophthalmic/Medical Tri-State Distribution Inc. Troemner Inc. Trotec Medical Corp <i>Dexide Inc.</i>
Qorpak	Serim Research Corporation	Standard Register <i>Advanced Medical Systems</i>	Sybron International Co. <i>Casco-Nerl Diagnostics Corp.</i>	Trudell Marketing International <i>Northgate Technologies</i>
QRS Diagnostic LLC	Shamrock Scientific Specialty Systems	Stanley Works <i>Jensen Tools Inc.</i>	Symmetry Medical Plant 2 Symmetry Medical Plant 3 Symmetry Medical USA Inc. Synthes Spine Company LP Synthemed, Inc. Synthes USA <i>Maxillofacual Div</i>	Tyco International <i>Kendall Healthcare Products Co</i>
Quantimetrix Corporation	Sharon Metal Stamping Corp <i>Walk On Air</i>	Starhelm Inc.	Tandem Medical, Inc. Techdevice Corporation Teleflex CT Devices Inc. T.C. Dental Products Inc. Terumo Europe NV <i>Terumo Medical Corporation</i>	Troemner Inc. Trotec Medical Corp <i>Dexide Inc.</i>
Quinton Instrument Company <i>Div of American Home Products Quintus Inc.</i>	Sharklids Eye Gear	Starline Dealers Association	U.S. Spinal Technologies, LLC Uarco Inc. Ultradent Products Inc. Uniforms Manufacturing Inc. Unique Technologies	United States Surgical Corp <i>Surgical Dynamics HTR Sciences</i>
Radius Medical Technologies	Sharn Inc.	Statcorp, Inc.	US Endoscopy Inc. Uresil L.P. Utah Medical Products Inc. Vacalon International Vadus Inc. Vascular Designs Inc. Vascular Solutions Vascutek Ltd Vector Inc. Venetec International Ventrex LLC Veratex Group <i>Veratex</i>	Veratex Group <i>Veratex</i>
RD Medical Manufacturing Inc.	Sheldon Manufacturing Inc.	SRI/Surgical Express	Vertex Industries Inc. <i>Torbal Division</i>	Vertex Industries Inc. <i>Torbal Division</i>
Reckitt & Colman Inc. <i>R & C Probrands</i>	Sigma Rx LP	Stepforward Co	Viasys Healthcare Inc. <i>Bird Products Corpak Medsystems Medical Data Electronics Nicolet Biomedical Sensormedics Corporation</i>	Viasys Healthcare Inc. <i>Bird Products Corpak Medsystems Medical Data Electronics Nicolet Biomedical Sensormedics Corporation</i>
Respironics	Sil-Med Corp	Steris Corporation	Vidamed Inc. Visitec Company Vision Sciences Inc. Vital Signs Inc. Vitatron Inc. <i>Medtronic</i>	Vidamed Inc. Visitec Company Vision Sciences Inc. Vital Signs Inc. Vitatron Inc. <i>Medtronic</i>
Restore Medical, Inc.	Sil-Med Corp	Stern Metals Inc. <i>Sterngold</i>	Vitek Systems	Vitek Systems
Richard-Allan Medical Industries <i>Richard-Allan Scientific</i>	Skedco Inc.	Storz-GMBH <i>American Cyanamid Spi Supplies Division</i>		
Rinn Corporation	Sklar Corp	Structure Probe Inc. <i>Spi Supplies Division</i>		
Roche Diagnostic Systems	Smart Medical Technology, Inc.	Stryker Corporation <i>Stryker BioTech Stryker Osteo AG Endoscopy Dimso Division Medical Patient Care Medical Patient Handling Stryker Bertec Stryker Instruments</i>		
Roxane Laboratories Inc.	Smartcare <i>Smart Practice</i>	Sultan Dental Products Ltd		
Royce Medical	Smartpill Corporation	Sultan Chemists Inc.		
Sabratek Corporation <i>Rocap</i>	Smith & Nephew Inc. <i>Endoscopy Division Orthopaedic Division Rehabilitation Division Wound Management Division</i>	Sulzer Medica		
Sadra Medical Corporation	Somnus Medical Technologies	Sulzer Intermedics Inc.		
Safco Dental Supply Co.	Sony Corporation	Sulzer Orthopedics Inc.		
Safety Medical International Inc.	Sorb Technology Inc.	Sunrise Medical		
Saf-T-Med	Sorin Biomedica <i>COBE Cardiovascular Inc. Sorin Biomedical Inc.</i>	Superior Health Care Group Inc.		
Sage Products Inc.	Sparta Surgical Corp <i>Maxillofacial Products Inc.</i>	Surgical Specialties Corp		
Sakura Finetek USA Inc.	Span-America Medical Systems Inc.	Surgical Warehouse Inc.		
Samco Scientific Inc.	Specialized Health Products	Surgicot Inc.		
Sarl Biomatlante	Specialty Surgical Instrumentation	Value Medical Products Inc.		
Savannah River Mills Inc.	Spectrum Medical Industries Inc.	Surgidev Corporation		
SBW Medical Products Inc.	Spectranetics Corporation	Surgimedics Inc.		
Scandius Biomedical Inc.	Spinal Kinetics	Denver Biomaterials Inc.		
Schleicher & Schuell Inc.	Spire Corporation	SURx Inc.		
Schwarz Pharma <i>Kremers Urban Company</i>	Sporicidin International	Sutura Inc.		
Sci Tech Dental Inc.	SS White Burs Inc.	Sybron Corp <i>Analytical Products Division Barnstead Company Belle de St Claire Clinical Technology Division Erie Scientific Company Kerr Manufacturing Company Mediatech Division</i>		
Science Incorporated	St. Jude Medical, CRMD			
Scientific Equipment Products	St. Jude Medical, Daig Division, Inc.			
Scientific Safety Solvents				
Scieran Technologies Inc.				
Scigen Scientific				
Scimed Life Systems Inc.				
Scion Cardio-Vascular				
Sempermed USA Inc.				
Senorx Inc.				
Septodont Inc.				
Seradyn Inc.				



Voland Corporation
Volcano Therapeutics
Vollrath Group Inc.
VQ Company
VWR International Company
W A Baum Company Inc.
W L Gore & Assoc Inc.
Wallach Surgical Device Inc.
Warner Lambert Company
 Parke-Davis Division
Welch Allyn Inc.
 Tycos Instrument Co
 Diatek Instructions
Welcon Inc.
West Pharmaceutical Services
Westaim Biomedical, Inc
Whatman PLC
 Whatman International Ltd
 Whatman Far East Pte Ltd
 Whatman Lab Sales
 Whatman Specialty Products
 Whatman Inc.
Wheaton Industries
Whip Mix Corporation
Whitney Products Inc.
 Ascent Medical Corp.
William A Cook
 Australia Pty LTD
Winfield Industries
Wright Medical Technology Inc.
Wyant Health Care
Yellow Springs Instrument Co
Young Dental Manufacturing Co
Zassi Medical Evolutions
Zefon International
 Zefon Medical Products
Zevex International
Zimmer Inc.
 Astel
 S & G Implants GMBH
 Zimmer Ltd
 Zimmer of Canada Ltd
 Zimmer Orthopaedic Implant Div
 Zimmer Orthopaedic Surgical
 Products

Zimmer Spine Inc.
Zirc Dental Products Inc.

Health Care Providers

Central Labs Blood Transfusion
Services
 (Bern, Switzerland)
The Cheshire Medical Center
 (Keene, NH)
Children's Hospital Medical Ctr
 (Cincinnati, OH)
Cuyahoga Falls General
Hospital
 (Cuyahoga Falls, OH)
Grande Ronde Hospital
 (La Grande, OR)
Geisinger System Services
 Geisinger Foundation,
 (Danville, PA)
Greenville Hospital System
 (Greenville, SC)
Howard Young Medical Center
 (Woodruff, WI)
Thomas Jefferson University
 (Philadelphia, PA)
Lee Memorial Hospital
 (Ft. Meyers Hospital)
Methodist Hospital of Indiana
 (Indianapolis, IN)
Riverside Community Hospital
 (Riverside, CA)
St. Francis Regional Med.I Ctr
 (Wichita, KS)
St. Francis-St George Hospital
 (Cincinnati, OH)
St. Peter Hospital
 (Olympia, WA)

Manufacturers

3M-Minnesota Mining &
 Manufacturing Corp.
Abbott Laboratories
Abbott Laboratories Animal Health
Advanced Sterilization Products
Agilent Technologies
Aircast Inc.
Alaris Medical System
Alcon
Allegiance Healthcare Corp.
Allergan Pharmaceuticals
Altana Inc.
American Pharmaceutical Partners Inc.
Amgen Inc.
Ansell Perry Inc.
Aplicare Inc.
Apogent Technologies
Apotex Corporation
Arrow International Inc.
Astellas Pharma Inc.
AstraZeneca
Augustine Medical Inc.
Aventis
Aventis Pasteur
B. Braun Medical Inc.
Bausch & Lomb Inc.
Bausch & Lomb Surgical
Baxa Corporation
Baxter Healthcare
Baxter Pharmaceutical Products Inc.
Bayer Corporation
Bayer Corp Animal Health
Beckman Coulter, Inc.
Becton Dickinson & Company
Berlex
Bertek Pharmaceuticals
Biomerieux Inc.
BSN Medical, Inc.
Boehringer Ingelheim
Pharmaceuticals
Boehringer Ingelheim Vetmedica
Bracco Diagnostics
Bristol-Myers Squibb U.S.
C R Bard Inc.

Cardinal CTS
Cardinal Health 414 Inc.
Carter-Wallace Inc.
Centocor
Cincinnati Sub-Zero
Colby Manufacturing Corp.
ConMed Corp.
Convatec
Cook Incorporated
Cordis Corporation
Dade Behring
Datascope Corp.
DePuy Orthopedics
Dey Laboratories, L.P.
Eastman Kodak Co.
Eisai Inc.
Elan Pharmaceuticals
Elanco Animal Health
Elekta Inc.
Eli Lilly & Co.
EndoPharmaceuticals
Energizer
Ethicon Endo-Surgery
Ethicon Inc.
E-Z-EM Inc.
Forest Pharmaceuticals Inc.
Fort Dodge Animal Health
Fuji Medical Systems, USA
Galderma Laboratories
Gaymar Industries
GE Medical Systems
Genentech Inc.
Generamedix
Getinge USA
Gilead Sciences
Glaxo SmithKline
Guidant Inc.
Gyrus Ent.
Heska Animal Health
Hill-Rom
Hoffman-LaRoche
Hospira Inc.
ICU Medical
Impax
IDEXX Laboratories Inc.

J & J Consumer Products
J & J Merck Consumer
Pharmaceuticals
Janssen Pharmaceuticals
Johnson Controls Inc.
Johnson & Johnson
Healthcare Systems
Karl Storz Endoscopy-America
Kimball
Kimberly-Clark Corp.
Kinetic Concepts Inc./KCI
King Systems Corporation
KV Pharmaceutical
Letco Companies
LifeScan Inc.
Ludlow Co.
Luitpold Pharmaceuticals
Mallinckrodt
Maquet
Masimo Corporation
Mayne Pharma
McNeil Consumer
Healthcare Co.
McNeil PPC
Medex Inc.
Medical Action Industries Inc.
Medimmune Inc.
Mediq
Medrad Inc.
Medtronic
Merck & Co.
Merck Vaccine Division
Molnlycke Health Care
Monarch Pharma
Mylan Pharmaceuticals Inc.
Novartis Animal
Health US Inc.
Novartis Nutrition Corp.
Novartis Pharmaceutical Corp.
Novo Nordisk
Pharmaceuticals Inc.
Nucletron Corporation
Nycomed Inc.
Ohmeda Inc.
Organon Inc.
Ortho-Biotech
Ortho-Clinical Diagnostics
Ortho-McNeil Pharmaceuticals
PDI Professional
Disposables International
Pfizer
Pfizer Animal Health

Possis Medical, Inc.
Procter & Gamble
Purdue Pharma
R & S Pharma LLC
Ranbaxy Pharmaceuticals Inc.
Regent Medical
Reliant Pharmaceuticals
Remel
Respironics Inc.
Richard Allen Scientific
Roche Diagnostics
Royal Cup Dine-Mor Inc.
Sage Products Inc.
Sanofi-Aventis
Santarus Inc.
SCA Hygiene Products
Schein Pharmaceutical
Schering Corp.
Schering-Plough
Schering-Plough
Animal Health
Schwarz Pharma Inc.
Scios Inc.
Sensormedics Corporation
Shamrock Scientific
Speciality Systems
Shire US Inc.
Siemens Medical Systems
Sigma Tau
Pharmaceuticals Inc.
Smith & Nephew CMCA
Smith & Nephew Endoscopy
Smith & Nephew Wound
Management
Smith Pharmaceuticals
Spacelabs Medical Inc.
SR Instruments, Inc.
Standard Register
Standard Textile Company
Sterling Diagnostic Imaging
Stiehl Laboratories
Stryker Instruments
Stryker Medical Division
Synthes
Sysmex Corp of America Inc
Takeda Pharmaceuticals
America
Tap Pharmaceuticals
Teva Neuroscience
TFX Surgical Group
Therakos, Inc.
Tyco Healthcare

Upsher-Smith Labs Inc.
UCB Pharma
UDL Laboratories Inc.
US Oncology Specialty LP
U S Surgical Corp.
Valleylab Inc.
Veterinary Learning Center
Viasys
Bird Products
Corpak Medsystems
Medical Data Electronics
Nicolet Biomedical
Sensormedics Corporation
Vital Images
Vollrath
Walco International Inc.
Welch Allyn Inc.
Welch Allyn Protocol
WL Gore & Associates Inc.
Wyeth Laboratories
Zenith Goldline
Pharmaceuticals
Zoll Medical Corp.

Wholesalers & Distributors

American Medical Distributors
Amerisource Corporation
ANDA Inc.
Applied Medical Distribution
ASD Healthcare
Bergen Brunswick Corp.
Besse Medical
Beutlich LP
Biopure Corporation
Blickman Inc.
Burlington Drug Company
Burrows Company
Cardinal Health Inc.
Carmel Pharma
Dakota Drug
Ethex Corp.
F.F.F. Enterprises
Fisher Scientific
Florida Infusion Services
General Injectables & Vaccines
H.D. Smith Wholesale Drug Co.
Harvard Drug Group
Herman Miller for Healthcare
ICS/Amerisource
J.A. Webster
Jarit Surgical Instruments

Kinray
Lanier Worldwide
McKesson Automation
McKesson General Medical
McKesson Medpath
McKesson Red Line Health
Care
McQueary Brothers Drug Co.
Merritt Veterinary Supplies Inc.
Metro Medical Supply
Morris & Dickson Co.
MWI Veterinary Supply
Oncology Supply
Oncology Therapeutics Network
Owens & Minor
Parmed Pharmaceuticals
Priority Healthcare Corp.
Professional Hospital Supplies
Professional Veterinary
Products
PSS World Medical
Sandoz Inc.
Shared Service Systems Inc.
St. John Companies, Inc., The
Tri-Anim Health Services Inc.
Universal Hospital Services
UPS Supply Chain Solutions
U.S. Food Service/Dietary
Products
Walco International Inc.

Group Purchasing Organizations

AmeriNet Inc.
Broadlane
Consorta
HealthTrust
Hospital Purchasing Service
Innovatix
Medassets / HSCA

Managed Health Care
Associates, Inc.
Medecon Services
MN Multistate Contracting
Alliance
National Oncology Alliance
Novation LLC
Premier
Resource Optimization &
Innovation
UHC
VHA Inc.

Data Resellers

Advantage Management
Solutions
Billian Publishing Co.
Data Business & Marketing
Health Market Science Inc.
IMS America Ltd.
Integrachain Systems
Marketing Initiatives Inc.
Meta Pharmaceutical
Services
PerSe
Prometrics
Solucient
Technology Marketing Group
US Lifeline
Verispan

Exchanges

Global Healthcare Exchange

Government Agencies

Centers for Disease
Control & Prevention
Defense Personnel
Support Center

HEALTH INDUSTRY NUMBER (HIN)

These companies have implemented the HIN System for customer identification.

For more information or to obtain your HIN free of charge, please call: 1.877.GETHINS.

HIBCC Board of Directors

CHAIR — JEFF HUTCHISON

Stryker Corporation, Director of Information Technology

CHAIR ELECT — GREG STIVERS

McKesson Medical-Surgical, Vice President, Customer Technology

SECRETARY/TREASURER — PATRICK DeGRACE

Hospira Worldwide, Inc., Director of Customer Care

IMMEDIATE PAST CHAIR — LARRY M. EGGER

HCA, Assistant Vice President, IT&S

AIMAN ABDEL-MALEK

GE Healthcare, General Manager, Global Services Technology

DAVE CATINO

HCA, Assistant Vice President, Strategy & Planning

RICHARD KRIOZERE

Digi-Trax Corporation, President

FRANK MALOIT

CR Bard, Inc., Vice President, Corporate Procurement

STEVE MCMANUS

Defense Supply Center Philadelphia, Deputy Dir., Medical Materiel

CLAUDE RITMAN

Coler - Goldwater Specialty Hospital, Executive Director

ROBERT A. HANKIN, Ph.D. — EX-OFFICIO

HIBCC, President & Chief Executive Officer

HIBCC Member Organizations

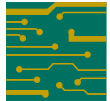
PERMANENT SEATS

Advanced Medical Technology Association (AdvaMed)
American Hospital Association (AHA)
Federation of American Hospitals (FAH)
Healthcare Distribution and Management Association (HDMA)
Health Industry Distributors Association (HIDA)
Pharmaceutical Research and Manufacturers of America (PhRMA)

AT-LARGE SEATS

Seats are appointed on a rotating basis by the HIBCC Board to provide a balance of industry representation. Current and previous appointments have included:

American Society for Automation in Pharmacy (ASAP)
American Veterinary Distributors Association (AVDA)
Association for Healthcare Resources and Materials Management (AHRMM)
Healthcare Information and Management Systems Society (HIMSS)
US Department of Defense (DoD)



**HEALTH INDUSTRY BUSINESS
COMMUNICATIONS COUNCIL**



2525 E. Arizona Biltmore Circle
Suite 127
Phoenix, AZ 85016 USA

PRESORTED STD.
U.S. POSTAGE
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Phoenix, AZ
Permit No. 176