Health Industry Moves Quickly to Adopt Uniform Bar Coding

BY CRAIG K. HARMON

The health care industry has long remained an economic island, less affected by national and regional economics than many other industries. Traditionally, this industry has been able to operate on a "cost-plus basis," passing increased costs on to the patient, health insurance companies and other third party payers. Beginning in October 1983, hospitals and other providers of health care will be subject to a government payment program limiting the amount the government or patient will be required to pay for specific procedures. The success of government-imposed cost limits will be closely monitored by the health insurance organizations, who are likely to follow the government's lead. Emphasis will be placed on cost containment—reducing costs, increasing productivity and maximization of inventory levels. In a move to improve productivity, control inventory and provide for more accurate data entry, the health industry is developing a standard method for bar coding.

Bar code systems have become commonplace in the retail consumer market. Within the past several years, bar coding has been adopted by a wide variety of industries. By year's end, it is expected that most, if not all, of the health industry will begin to use one standard bar code based system of data acquisition.

At a meeting held in Chicago on June 28 and 29, a group of 145 health industry leaders met to set in motion the design, specification, format and implementation schedule for the Health Industry Bar Code (HIBC) symbol. Twelve participants of the First Plenary Session of the HIBC Conference were appointed to serve on the HIBC task force, chartered with the tasks of developing final recommendations for the HIBC symbol by September 1, 1983. These final recommendations will be circulated to session attendees, the Health Industry Distributors Association, the Health Industry Manufacturers Association, American Hospital Association members, other industry organizations and interested parties. A Second Plenary Session of the HIBC Conference is scheduled for October 4 and 5 to adopt an HIBC symbol.

The HIBC task force, consisting of three members each from manufacturers, distributors, hospitals and technical consultants, began their work on July 8.

Their task is framed by the decisions reached at the First Plenary Session:

1. To have only one, uniform machine-readable bar code method of data acquisition;
2. The manufacturer's identification code will be unique and conform to the manufacturer's number issued by the Uniform Product Code Council (UPCC), if the UPCC agrees to assign and control the issuance of the manufacturer's identification code;
3. The product code will be variable in length and allow both alphabetic and numeric content;
4. The code will include a unit of measure identifier;
5. The machine-readable symbology will appear, where possible, on all levels of packaging.

Following a review of position papers submitted to the task force, the task force agreed that three bar code formats could meet the requirements of the general assembly of the First Plenary Session. These formats are Code 39, Code 128 and Code 93. Two other code formats are under consideration by the task force. They are UPC and Codabar. UPC is being considered because of its use on health products in both the retail and hospital markets. UPC, however, fails to meet all requirements of the general assembly. It is not variable in length, does not normally include a unit of measure identifier and cannot encode alphabetic characters. Codabar is being considered because of its use by the American Blood Commission (ABC) and their committee for the Commonality in Blood Banking Automation (CCBBA). In 1977, the CCBBA/ABC adopted Codabar as their standard bar code. Codabar fails to fulfill one of the requirements of the general assembly. It is unable to encode alphabetic characters. Negotiations are continuing with the American Blood Commission to ensure that the Health Industry Bar Code symbol will meet the needs and be embraced by the entire health care community.

The health industry is moving at record speed to adopt an HIBC standard. This rapid adoption is possible because the health industry needs only to define the HIBC symbol format and decide who will administer the assignment and control of manufacturer's identification codes. Two organizations are being con-

sidered to administer and control the assignment of these codes: the Uniform Product Code Council (UPCC) and the Health Industry Manufacturers Association (HIMA). Technical specifications for printing, decoding, tolerances, quality assurance, environmental effects, orientation and placement are well-established in existing standards of the American National Standards Institute (ANSI), the Distribution Symbology Study Group (DSSG), the UPCC, LOGMARS, the Automotive Industry Action Group (AIAG), the American Blood Commission (ABC) and the Automated Identification Manufacturers (AIM) section of the Material Handling Institute (MHI).

Use of any type of machine-readable symbology will represent a significant change for the health industry; however, if any industry understands change, it *is* the health industry. These changes may be predicated on new medical discoveries, new breakthroughs in packaging, application of new technology and FDA labeling requirements.

The following is a projected timetable for implementation of the HIBC standard:

September 5, 1983—Receipt of the HIBC task force final recommendations by general assembly members and all interested parties.

October 4 and 5, 1983—Second Plenary Session of the general assembly; adoption of the HIBC task force final recommendations, as modified.

January 1, 1984—Publication and release of the Health Industry Bar Code symbol standard.

July 1, 1984—Implementation date of the HIBC symbol standard, industry-wide.

The Second Plenary Session of the general assembly is open to all persons interested in the Health Industry Bar Code task force. While the First Plenary Session was restricted to the number of participants, due to the physical limitations of the facilities, the second session is being designed to accommodate all interested parties. Persons desiring information regarding the Health Industry Bar Code task force, final recommendations and the Second Plenary Session are invited to contact: HIBC Conference, c/o American Hospital Association, HIBC Conference—8 West, 840 N. Lake Shore Drive, Chicago, IL 60611, telephone (312) 280-6083.

The Department of Defense has estimated that adopting the LOGMARS bar code standard will save $114 million per year in military procurement distribution costs. Similar savings can be expected if the health industry adopts an HIBC standard. Speedy adoption of an HIBC standard will help contain health care cost and benefit manufacturers, distributors, hospitals and patients alike. □

Barred Software: Making Software Retailing Easier

With software sales projected to reach $10 billion over the next few years, software retailers need to automate their inventory control. Softwareland, the Scottsdale, Arizona software retailing chain, is taking the lead in urging software vendors to adopt the Uniform Product Codes. The grocery industry has used product coding for years to improve inventory control. Bar coding software products offers similar advantages for both vendors and retailers.

"The code numbers allow retail outlets to complete sales more quickly and efficiently," says Taylor R. Coleman, president of Softwareland Corp. "They also reduce the possibility of errors, due to cashiers punching in numbers incorrectly."

Softwareland's bar code based point-of-sale (POS) system has made it easier to track product inventories. Bar codes identifying software products are read with each sale and are used to automatically update inventory figures. Daily printouts of stock movement provide suppliers and retailers with valuable information.

"In that way, the retailer can tell at a glance which items he's running low on," explains Jeffrey Lyons, Softwareland's Senior Vice President of POS Systems. "Orders for more stock can be placed more quickly, to ensure that vendors don't run out."

Softwareland is providing software vendors with the basic information needed to obtain Uniform Product Code numbers for their products. The numbers are issued by the Ohio-based Uniform Product Code Council, Inc. Once a vendor has obtained a UPC number, Softwareland will provide the vendor with free camera-ready copies of the bar code for use on product packaging. "We're assisting the implementation of product codes in one of the most practical ways possible," says Lyons.

As software sales escalate, so do the number and variety of available software products. "With the current explosion of products on the market, a uniform approach to pricing and selling those products is becoming more and more important," says Coleman.

In addition to encouraging UPC product coding, Softwareland is introducing other innovative features for point-of-sale operations. One of these features is a magnetic stripe reader used to handle credit card sales. The reader prevents credit card fraud in two ways.

"With the mag stripe reader, the system reads a credit card number and automatically telephones the bank to ensure that the card is valid," explains Lyons. "Before the system releases the card, the bank must approve the transaction." The reader also prevents fraud by eliminating the need for traditional credit card slips.

"Normally, the carbons for those slips get thrown out, and there have been many cases where people have obtained the carbons, and thus have gotten access to a valid credit card number," Lyons continues. "With that number, goods can be purchased by mail order from many retail outlets."

The use of Uniform Product Codes and mag stripe readers should result in paperless sales transactions. And overall efficiency of point-of-sale personnel will be improved. Softwareland is committed to development of a fully integrated POS system automatically linking retail sales with inventory, accounting and other store management functions. □

Health Industry Bar Code (HIBC) Task Force Publishes Final Recommendations

BY CRAIG K. HARMON

The HIBC task force has published its final recommendations for the HIBC symbol and code. These recommendations have been provided to members of the First Plenary Session of the HIBC Conference which was held on June 28 and 29, 1983 in Chicago.

Two HIBC labels have been recommended by the HIBC task force: a primary label and a secondary label. The primary label recommendations follow the format:

$$S + M\,M\,M\,M\,P\,P\,P\,P\,P\,P\,P\,U\,C\,S$$

where:

FIELD NUMBER	FIELD LENGTH	(F)IXED LENGTH/ (V)ARIABLE LENGTH	FIELD DESCRIPTION
1 S	1	F	Start code; *
2 +	1	F	HIBC label flag character; +
3 M	4	F	Manufacturer's identification code (MIN); alphanumeric; first character is always an alphabetic character (A–Z)
4 P	1–8	V	Manufacturer's product or catalog number (PCN)
5 U	1	F	Unit of measure identifier (U/M); 1 to 9; 0 in this field means unknown
6 C	1	F	Mod 43 check character
7 S	1	F	Stop code; *

The recommended format for the HIBC secondary label follows the format:

$$S \pm D\,D\,D\,D\,B\,B\,B\,B\,B\,B\,B\,B\,L\,C\,S$$

where:

FIELD NUMBER	FIELD LENGTH	(F)IXED LENGTH/ (V)ARIABLE LENGTH	FIELD DESCRIPTION
1 S	1	F	Start code; *
2 +	1	F	HIBC label flag character; +
3 D	4	F	Expiration date; Julian date 0000 indicates that no expiration date exists
4 B	0–8	V	Lot/batch/serial number (LBS)
5 L	1	F	Link character (from primary label check character)
6 C	1	F	Check character (modulus 43 derived)
7 S	1	F	Stop code; *

The recommended symbology for the HIBC symbol is Code 39. Code 39 was selected after careful consideration of several bar code symbologies. The formats considered were Code 39, UPC, Code 93, Code 128 and Telepen.

The UPC Council, which administers bar coding in the grocery marketplace, declined to administer the HIBC symbol and code for the health industry. HIMA has not taken a position regarding assuming the administrative role. AHA has also been asked if they would assume the administrative role. They have not taken a position regarding assumption of these responsibilities. Should HIMA and AHA both be unable to take a positive position regarding HIBC standard administration, the Federation of American Hospitals has indicated that they would probably assume the responsibilities.

The HIBC task force has recommended that a standard should be published on January 1, 1984 with health industry implementation completed by January 1, 1985. Implementation is voluntary and under the direction of the hospitals.

Complete final recommendations and other HIBC documents were included in the material distributed at the Second Plenary Session on October 4, 1983. Interested parties are invited to contact any HIBC task force member for details. For further information, contact HIBC Conference, c/o American Hospital Association, 840 N. Lake Shore Drive—8 West, Chicago, IL 60611.

Prescription For Hospital Fixed Assets Management

BY ROGER FLUKE

O ver the last eighteen months, the health care industry in this country has paid particular attention to the application of bar codes and optical scanning as a possible solution to various management problems within hospitals. Articles have appeared in a variety of trade papers discussing the available equipment that enables the machine to read the bar code. There has also been discussion of using this technology to control materials. This article covers the application of bar code and optical scan in the management of fixed assets. The article covers the typical problems encountered in this area and some practical how-to information on the implementation of and the use of the bar code/optical technology in the management of fixed assets.

Typically the problems in the management of fixed assets are found in an organization's attempt to verify financial records. The approach most often used to verify the records is a wall-to-wall physical inventory and full reconciliation of the data collected. The difficulty encountered is getting a very busy hospital staff to conduct a complete physical inventory and reconciliation. Hospital staffs are not well trained, not very interested, and have too many other responsibilities, giving the inventory activity a very low priority. In addition, a great deal of time and money

is spent collecting data that has little value, due to the rapidly changing environment of a medical facility. As a result, institutions have little idea if a particular asset is presently within the facility or if so, where it may be located. For financial reasons, organizations are requiring solutions to problems in order to gain tighter management control of the assets.

> *The use of a bar code/optical scan system will go a long way in solving the problems of a hospital's fixed assets management.*

Seven years ago Criterion Systems developed and implemented a mini-computer-based system which used bar code tags and optical scanners as key elements to automate the physical inventory and reconciliation processes. The hardware consists of a minicomputer, telecommunication modem, and portable data entry terminals with attached optical scanners and property tags that can be read by both the human eye and the optical scanner. The software consists of standard fixed asset accounting programs and custom physical inventory and reconciliation programs. With a bar code property tag

on the individual assets, the inventory and tracking functions are accomplished using a portable optical scanner. As a pioneer in this new application, there were many obstacles to overcome. The problems were overcome and have successfully guided many bar code/optical scan fixed asset management system implementation projects.

The bar code property tag/optical scan technique is a simple concept. With a bar code property tag on the individual assets, the inventory process and tracking function are accomplished with a portable optical scanner. Inaccurate information is reduced to a negligible amount. The E G & G report commissioned by the United States Government in 1978 revealed that the handwritten method of data collection can gather information at a rate of 3.3 items per minute with an error rate of 11.6%. Recalling the original problems of understaffed institutions and the low priority involved, and time-consuming activity of converting to a bar code/optical scan system, the question of the benefits of the conversion is central to the administration of the institution. The return on the investment in a bar code/optical scan information system for the management of fixed assets is substantial. An improved management structure will gain physical control of assets by quickly and accurately verifying financial

records. When considering the rapidly changing physical environment, the lack of manpower to conduct labor-intensive activities quickly justifies a bar code/optical scan fixed asset management system.

The use of a bar code/optical scan system for the management of an organization's fixed assets would automate the labor-intensive and mechanical process of physical inventories and reconciliations and would go a long way toward solving some of the labor problems. In the re-inventory process, the operator needs only to identify the location, scan the bar code tags attached to each asset, and transmit the data to the computer. In the reconciliation process, the operator needs only to tell the computer to conduct the required analysis and the inventory gains, inventory losses and changes in physical location will be identified. The end result is an updated master fixed asset listing for the facility. This master listing is updated when an item is purchased, disposed, or transferred to a different department. An organization will see benefits in the form of faster

compliance to government and corporate inventory requirements, increased reporting accuracy, reduction in the time for non-revenue generating activities, and a reduction in the cost of inventory management functions. The use of this system will enable a hospital staff to conduct physical inventories and reconciliations simply and effectively.
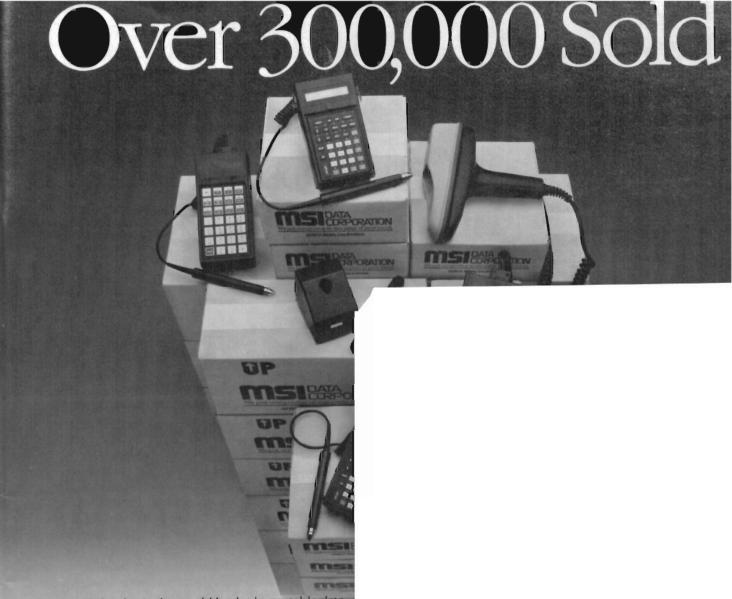
In addition to these tangible benefits, many intangible benefits will be derived from an automated system. Implementation of a bar code/optical scan computer system may cause some fundamental changes in the way equipment is treated within the accounting structure. With the ability to track the physical location of the assets, accurate cost allocation of the depreciation expense to the departmental user of the equipment is done automatically. This prevents inaccurate allocation of the expense. Accurate equipment listing by department will help increase responsibility for the control of the equipment by departments. With this accurate and timely information, hospital personnel will make more informed decisions

about the equipment. Users will also be able to locate specific pieces of equipment in a fraction of the time typically required. The time savings will increase productivity for such activities as calibration, preventive maintenance, and the pooling of equipment resources. This tool will also provide accounting people, materials managers, bio-med personnel and corporate managers the intangible benefits that result from tighter management control.

With the technical advances in equipment and the careful application of bar code/optical scanning for the management of fixed assets, an automated system will go a long way towards relieving the understaffing problem in today's hospitals; providing the tangible benefits of automating a repetitive manual task; and providing the intangible benefits of an improved fixed assets management system. ∎

Roger Fluke is Director of Business Applications for Criterion Systems, Inc. of San Jose, CA.

New Standards:
Bar Code Markings For Healthcare

BY CRAIG K. HARMON

O n March 15, 1984, the Health Industry Bar Code Council (HIBCC) adopted the HIBC Standard as a uniform method of bar code marking products and other items in the healthcare industry. This effort formally began on June 28, 1983 and within the following nine months the health industry had sponsored two conferences, reviewed the responses of over 350 organizations, published three documents (Interim Recommendations, Final Report, and the HIBC Standard), broadened its representation to include other affected industry segments, established the HIBC Council, appointed its Board of Governors, and begun the process of issuing and maintaining identification codes for labelers of healthcare products.

The purpose of the effort was to consider a method to improve the economic strength of the healthcare industry through a standardization of machine-readable bar code markings. With the Standard in place to address the uniform marking of incoming items of supply from health product manufacturers and distributors, hospitals, manufacturers, and distributors are presented with three immediate opportunities:

1. To capitalize on incoming HIBC marked products in materials management with control and cost assignment;

2. To use this same Standard for internal hospital use in a wide variety of areas, i.e., pharmacy, medical records, lab, blood, etc.;

3. To use this same Standard for internal manufacturer/distributor applications, i.e., WIP, distribution, labor accounting, MRP data entry, order entry, returns processing, product rotation, product recall, product traceability, packing orders, shipment verification, etc.

> *On March 15, 1984, the Health Industry Bar Code Council (HIBCC) adopted the HIBC Standard as a uniform method of bar code marking products and other items in the healthcare industry.*

The HIBC standard defines formats for identifying labeler, product, and unit of measure, and expiration date and lot number for the healthcare product. The HIBC Standard Symbol is Code 39 with initial printing specifications as those contained in ANSI MH10.8-1983 relating to Code 39 or bar code printing in general. The recommended format for the HIBC Primary Symbol is shown in Table 1.

As an alternative to the alphanumeric LIC and PCN described above, an alternative format for the Primary Symbol as shown in Table 2 allows the use of the National Drug Code (NDC), the National Health Related Items Code (NHRIC), or the Uniform Product Code (UPC).

An optional HIBC Secondary Symbol as shown in Table 3 defines the format for the encodation of Expiration Date and Lot/Batch/Serial Number.

The HIBC Council has received recommendations for "unit of use" marking that will result in shorter label length than described above without obsoleting those structures. It is expected that review of these recommendations will be forthcoming.

Other notable issues include:

1. HIBC Symbols are recommended initially to be employed on master carton packaging. Uses on lower levels of packaging may be phased in as appropriate and as technologically and economically feasible.

2. Packaging primarily intended for the hospital market should use Code 39. Where the product packaging is primarily intended for the retail market and the same packaging is provided to the hospital market, UPC Versions A or E marking is preferable to no bar code markings.

3. The Unit of Measure Identifier is a relative measure with "1" being "unit of use." Where a unit of use is contained in a box, inside a carton, inside a case, and on a common product pallet: Unit of Use=1; Box=2; Carton=3; Case=4; and, Pallet=5. No common definition exists for levels of packaging and different manufacturers and prod-

TABLE 1
Recommended Format for HIBC Primary Symbol

∗	+	I	I	I	I	P	P	P	P	P	P	P	P	P	P	P	P	P	U	C	∗

where:

Field Number	Field Length	(F)ixed Length/(V)ariable Length	Field Description
1 (∗)	1	F	Start Code "∗"
2 (+)	1	F	HIBC Symbol Flag Character " + "
3 (I)	4	F	Labeler Identification Code (LIC); Alphanumeric and First Character is always an alphabetic character
4 (P)	1–13	V	Labeler's Product or Catalog Number (PCN)
5 (U)	1	F	Unit of Measure Identifier; "1 to 9"; 0 in this field means undefined
6 (C)	1	F	Check Character (Modulus 43 derived)
7 (∗)	1	F	Stop Code

TABLE 2
Alternate Format for HIBC Primary Symbol

∗	+	+	N	X	X	X	X	X	X	X	X	X	X	U	C	∗

where:

Field Number	Field Length	(F)ixed Length/(V)ariable Length	Field Description
1 (∗)	1	F	Start Code "∗"
2 (++)	2	F	HIBC Alternate Format Flag Chars. " ++ "
3 (N)	1	F	Number System Character; "3" for NDC and NHRIC items and 0 for grocery items
4 (X)	10	F	NDC, NHRIC, or UPS NS 0 number
5 (U)	1	F	Unit of Measure Identifier
6 (C)	1	F	Check Character (Modulus 43 derived)
7 (∗)	1	F	Stop Code "∗"

ucts require differing terms. The Unit of Measure is a relative measure providing the maximum flexibility in product packaging.

4. Product or Catalog Number and Lot/Batch/Serial Number Codes will be compressed to remove all special characters and embedded spaces.

5. The printed symbol will include all human-readable characters appearing in the machine-readable symbol, inclusive of the start and stop characters.

6. The Alternative Primary Bar Code Symbol, also known as the Sherwood Amendment, employs the Number System Character from the UPC Symbol

(0 for grocery items and 3 for NDC and NHRIC items) and the 10 digit labeler/product code (NDC, NHRIC, or UPC). The Modulus 10 Check Digit of the UPC Symbol *is not used* in HIBC implementations.

7. The Secondary Bar Code Symbol is optional and should be included as a negotiating point in contracts between purchaser and supplier if the purchaser desires such marking. This same caveat exists for HIBC markings on levels of packaging below master carton levels.

8. Where both a Lot/Batch Number and a Serial Number exist, it is preferred that the Serial Number be employed in the marking of the individual item and the Lot/Batch Number be employed on higher levels of packaging.

9. The HIBC Secondary Symbol is distinguished from the Primary Symbol in that the Primary Symbol has a non-numeric character following the HIBC Symbol Flag Character "+," while the Secondary Bar Code Symbol has a numeric character or a "$" following the Flag Character "+."

10. When the HIBC Symbol is printed at densities where the nominal narrow element is greater than or equal to 0.020 inch, the intercharacter gap should be equal to the nominal narrow space.

11. The human-readable interpretation of the HIBC is intended to be used for human recognition only, and not as a method of machine readability. The representation of zero will be "0." No specific font style or size is defined and will be left to the manufacturer's option.

12. Reflectivity and Contrast, Quiet Zone, Bar Edge Roughness, and Spots and Voids for the HIBC Symbol are contained in ANSI MH10.8-1983. Consequently, visible-red readers are recommended when reading product HIBC Symbols, though infrared readers could be employed in internal "closed loop" systems.

13. Since a hospital could expect to receive some products that were marked with high density Code 39, high resolution readers might be found to be more acceptable.

14. Since one could reasonably expect either Code 39 markings or UPC

TABLE 3
Optional HIBC Secondary Symbol
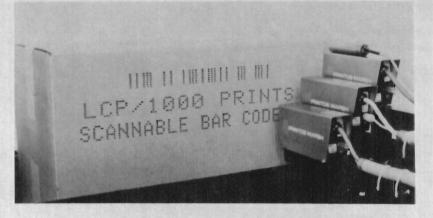
` · + D D D D D B B B B B B B B B B B B B L C · `

where:

Field Number	Field Length	(F)ixed Length/ (V)ariable Length	Field Description
1 (·)	1	F	Start Code "·"
2 (+)	1	F	HIBC Symbol Flag Character "+"
3 (D)	5 or 1	F	Expiration Date (YYDDD); Julian Format; No Expiration Date is indicated by "$"
4 (B)	0–13	V	Lot/Batch/Serial Number
5 (L)	1	F	Linkage Character (From Primary Symbol Check Character)
6 (C)	1	F	Check Character (Modulus 43 derived)
7 (·)	1	F	Stop Code "·"

markings (Versions A or E) to appear on products in the Materials Management and Receiving areas, bar code reading equipment should be able to auto-discriminate between Code 39 and UPC, without operator intervention.

The HIBC Council will issue and maintain Labeler Identification Codes (LICs). Labelers will be charged a one-time registration fee for assignment and maintenance of their LIC. The following schedule represents these fees:

1983 Domestic ($ MM)	HIBCC LIC Fee First Code
2.0	$ 500.00
5.0	$ 1,250.00
10.0	$ 2,500.00
30.0	$ 4,000.00
60.0	$ 5,000.00
100.0	$ 7,500.00
150.0	$ 9,000.00
500.0	$12,000.00
Over 500.0	$20,000.00

Additional LICs (to identify subsidiaries and divisions) will be issued at a rate of $100.00 per number. The LICs will be issued in blocks as requested by the Labeler. Specific LICs (vanity codes) will not be issued and Labelers will receive sequential codes on a first come, first served basis. Some hospitals provide products to other healthcare institutions, e.g., blood, bone marrow, organs, etc. Hospitals will be issued LICs at a rate of $200.00 for the first code and $100.00 for each additional LIC.

The HIBC Standard, application form for LICs, and questions relating to the HIBC Standard can be directed to:

Henry S. Givray, Executive Director
HIBC Council, Inc.
111 E. Wacker Drive Suite 600
Chicago, IL 60601
(312) 644-6620

Questions relating to HIBC implementations at hospital, manufacturer, and distributor levels can be directed to:

Craig K. Harmon, President
Q.E.D. Systems
P.O. Box 2524
Cedar Rapids, IA 52406-2524
(319) 377-2518 ∎

Craig K. Harmon is the President of Q.E.D. Systems and former Chairman of the Health Industry Bar Code (HIBC) Task Force responsible for the development of the HIBC Final Recommendations. Mr. Harmon currently serves as Technical Advisor to the HIBC Council and the American Hospital Association's Hospital Bar Code Task Force, and further serves on the HIBC Council's Technical and Marketing Committees.

How To Cure
Medical Supply Chaos

BY LEONARD MATTEO, JR.

Running out of medical supplies? Overstocks? Understocks? These problems have plagued hospitals from the times of Florence Nightingale. How can medical manufacturers work with hospitals to solve this problem? One answer is bar code. These striped labels have already begun to bring order out of medical supply chaos.

Hospitals have been quick to embrace bar code applications. Therefore, it is no surprise that the health care industry recently adopted a bar code standard for all its products. About 200 representatives of hospitals and health care product manufacturers and distributors voted to accept the Code 3 of 9 format. The code, already in use by the Department of Defense, incorporates product numbers using the National Drug Code, National Health Related Items Code and the Universal Product Code. This Health Industry Bar Code is already compatible with 95% of the industry's 65,000 medical/surgical items.

"It's important to remember that bar coding is really an extension of data entry that can improve productivity in all phases of the operation of any business. To a hospital that not only means better inventory control, but also faster data entry, improved tracking on patient records and more efficient billing,"

says Joseph Cadella, President of BING™ Software Systems in North Haven, Connecticut.

BING, a division of CSSI, Inc., is a consulting and custom programming firm. They specialize in developing bar code applications and data collection systems. CSSI and BING offer a varie-

> *Before adopting bar code, hospitals and other companies had a real problem collecting and validating data.*

ty of software applications ranging from financial packages to manufacturing and distribution systems. The firm developed a bar code reader called DataClock™ which is used for data collection and inventory systems. "We began recommending bar code applications to our clients when we saw how much they improved the accuracy of data collection," says Cadella.

Before adopting bar code, hospitals and other companies had a real problem collecting and validating data. Orders for supplies were handwritten and keyed into a computer. The biggest problem was validating data before computer entry. Bar code data entry

reduces much of the order writing and transcription mistakes. Before bar code, one slip of an order taker's pen could result in an order for 10,000 tongue depressors instead of 10,000 units of penicillin.

There have been similar advances for the manufacturers of health care products. According to Ralph Camera, Director of MIS for Seamless Hospital Products in Wallingford, Connecticut, "Using bar code as a data collection alternative will allow our company to process customer orders faster and more accurately. It will improve our ability to respond to our customers' needs faster and will speed our delivery time." Camera adds, "Our company especially likes the fact that the system will save us money on collecting, processing and maintaining data. Bar codes will reduce our billing cycle and will lead to more accurate invoicing. This will mean an accelerated cash flow. Our bar code system promises to improve the productivity of our operation and optimize the effectiveness of our payroll dollars without increasing our staff."

For the past year, Seamless and BING have been working together to develop data collection bar code systems as part of Seamless' order entry system. Currently, the two companies are working together on the final stages

of evaluating bar code devices and their applicaton.

Here's how the Seamless system works: hand-held bar code readers are provided to many Seamless customers. The bar code reader includes a wand, numeric keypad, built-in acoustic modem and data storage.

A customer ordering supplies follows a simple, three-step procedure. First, the bar code label of the item to be ordered is read. Then the quantity needed is keyed into the reader. The customer then transmits the data stored in the reader to Seamless by telephone using the acoustic coupler in the reader. After receiving the data, Seamless fills the order without having to go through a separate data entry process.

Seamless chose BING to handle their unique data collection needs because of the software company's strength in the manufacturing area. "We felt we could benefit from their experience with time and attendance and manufacturing applications. We wanted them to help us increase our productivity and decrease our costs," says Mr. Camera.

Others in health care are also becoming interested in bar code applications. Several major hospitals and health care manufacturers are working to enhance their current systems by using bar code. Their goals are to eliminate the drudgery of many tasks and improve the accuracy of data collection. In addition to order data entry, bar code can help in inventory control, patient record keeping and billing. ■

Leonard Matteo is employed by BING Software Systems in North Haven, CT.

R E S C A N

In the article entitled *Portable Bar Code Readers: An Overview* that appeared in the May/June 1984 issue of *Bar Code News*, we neglected to mention that portions of the text were excerpted from the soon to be released book *Reading Between the Lines, An Introduction to Bar Code Technology* by Craig K. Harmon and Russ Adams.