

**NHS PASA's
Position Statement on
Automatic Identification for
products sold to and used
by the English NHS**

**E-Commerce Directorate
NHS Purchasing and Supply Agency**

5 October 2004

Version 0.6

Table of Contents

	Page
1. Recommendation for suppliers to the English NHS	2
2. Recommendations by product category	2
3. Recommendation for codification of products in databases	3
4. AIDC and systems compatibility	3
5. Why EAN.UCC?	4
6. Conclusion	7
Contacts	8
Glossary	9

1. Recommendations for suppliers to the English NHS

- 1.1 NHS PASA support the voluntary use of bar codes for the unique identification of products sold to and used by the English NHS.
- 1.2 NHS PASA recommend that all products being supplied to the English NHS should be identified using a bar code, which should preferably be the EAN.UCC.
- 1.3 The only exclusion to this recommendation is for products already coded using the HIBC format. Suppliers using the HIBC set of standards may continue to do so for the foreseeable future.
- 1.4 Suppliers using other bar code standards are strongly advised to migrate to EAN.UCC as soon as possible.
- 1.5 All suppliers planning to bar code their products are strongly advised to consider only the EAN.UCC set of standards.

2. Recommendations by product category

NHS PASA envisages that, through uniquely identifying products from cradle to grave, NHS stakeholders are able to track and trace, accurately identify and administer those products: improving supply chain efficiency and patient safety. The way to ensure unique product identification is for all products and “aggregated purchase units”^{*} to be coded and bar coded before entering the NHS supply chain with a globally unique code and symbol, controlled centrally by an organisation. EAN International and HIBCC are such organisations.

2.1 Single use products, consumables and unit dose (disposable)

EAN.UCC for application and capture on any single use product, consumable or unit dose in the NHS

2.2 Single Use products - multiple issue (disposable)

EAN.UCC for application and capture on any single use unit – multiple issue in the NHS. E.g. Blister pack, tube of ointment.

2.3 Re-usable products, loaned products

EAN.UCC for application and capture on any re-usable or loaned unit in the NHS. For assistive technology PASA endorse the BHTA guidelines. These guidelines can be found at www.e-centre.org.uk

2.4 Bespoke, assembled, compounded products

EAN.UCC for application and capture on any bespoke, assembled or compounded product in the NHS. For assistive technology PASA endorse the BHTA guidelines. These can be found at www.e-centre.org.uk

* Aggregated purchase unit = consumer unit, multi pack, case, pallet

2.5 Products transferred or resold within the NHS

Where products are transferred or resold in the NHS, they should be still identified by their original code and bar code and not be re-coded or re-bar coded. This code and bar code should be EAN.UCC.

2.6 Assets

EAN.UCC standards include asset identification for tracking.

2.7 Medical devices recorded in patient records

EAN.UCC for application and capture on any medical or surgical device that is to be held within the NHS Dictionary of Medicines and Devices, which will support the NHS Care Record System by the end of 2005.

2.8 Products imported into the English NHS

EAN.UCC for application and capture on any product being imported and distributed into the NHS. In the case of re-labelling or repackaging, the product requires a new EAN.UCC code to be applied.

2.9 Products in transit

EAN.UCC for all aggregated purchase units delivered to the NHS.

3. Recommendation for codification of products in databases

In addition to the PASA guidelines for product coding (supplier product number), Trusts involved with codification in the NHS as part of building their catalogue, should record the product's original EAN.UCC (or HIBC) code for automatic identification and demand capture.

PASA also recommend that product codes be recorded in the databases of all companies in the supply chain, so ownership of the product is known before passing it on to the NHS, to ensure full product traceability.

4. AIDC and systems compatibility

All IT system applications involving recording product information should be adapted if necessary, to allow recording of the EAN.UCC code.

At present, few of the e-procurement systems in the NHS are capable of using bar codes for automatic identification and demand capture (AIDC). PASA has begun working together with leading e-procurement system providers to adopt and roll out the use of bar codes in the NHS.

By recommending the adoption of EAN.UCC data set, PASA do not prescribe the data carrier to be used by suppliers. A full list of data carriers (bar codes, two dimensional codes and radio frequency identifiers) is available from e.centre, by emailing Healthcare@e-centre.org.uk.

5. Why EAN.UCC?

In 2003, NHS PASA studied the different options for product codification using automatic identifiers:

5.1 Coding environment

The first step in the decision process was for PASA to choose the coding environment that best suited the NHS community. The four options defined are based on the combination of identifiers (ISO or non-ISO) and control system (closed or open).

Option 1: Proprietary (non-ISO) identifiers – Closed system

Option 2: Many global identifiers – open system

Option 3: One global identifier – Closed system

Option 4: One global identifier – Open system

Option 1: Proprietary (non-ISO) identifiers – Closed system

i.e.: NSV (National Supplies Vocabulary)
PIP (Pharmaceutical interface products code)

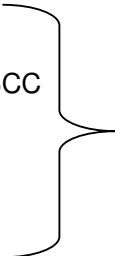
Where organisations create their own code structure, they destroy the possibility of uniquely identifying products throughout the supply chain. This option also requires the organisation that dictates the code to maintain the system and to police its use in the supply chain. Therefore it is applicable only in supply chains completely managed by the customer (or distributor). Additionally, proprietary identifiers are not interoperable with other identifiers and cannot be communicated with non-compatible systems.

The message is: Suppliers Should Not Invent Their Own Code Structures

Option 2: Many global identifiers – open system

i.e.: Interleaved 2of 5
EAN.UCC
Code 39 and HIBCC
Code 128
PDF417
Maxicode
DataMatrix
QR Code

in the NHS



Where organisations allow multiple standards they complicate the message to suppliers about one code throughout the supply chain and force suppliers down the route of standards comparison and evaluation many times over. By allowing many standards to specialise in different supplier groups, there is also a possibility that standards may develop into proprietary: i.e.: the healthcare standard or the car manufacture standard, which are not inter-operable and carry different sets of data.

The message is: Standardise Code Structures

Option 3: One global identifier – Closed system

i.e.: EAN in Marks & Spencer
NPC represented with Interleaved 2 of 5 in NHS Logistics and the NHS

This option applies to organisations that have complete control over their total supply chain from point of manufacture through receipt to point of use.

Where organisations decide to standardise on one global code structure but keep the copyright and royalties of the identifier to themselves, they repeat Option 1.

The message is: Suppliers Should Control and Manage Their Own Codes

Option 4: One global identifier – Open system

I.e.: EAN.UCC in Tesco, Asda and elsewhere in the retail sector
EAN.UCC plans in Pharmaceuticals Industry

Where organisations decide to standardise on one open global code structure and ask that all their suppliers comply with the decision, life for suppliers and customers is straightforward: they can communicate their requirements (requisitions, orders, delivery notes, invoices) in a common language and they can expect their items to be identified in a standard format. The biggest advantage is that Option 4 is an “all systems go” situation for suppliers who can buy a standard solution package and open to their business doors to new opportunities.

The message is: There should be one Global Coding Standard For All Suppliers Controlled and Managed by Suppliers themselves.

PASA has decided that Options 1,2 and 3 are not conducive to the needs of the English NHS and therefore recommends the adoption of Option 4 for all suppliers.

5.2 Comparison & evaluation of global coding standards

PASA needed an objective mechanism to compare and evaluate the different ISO standards for coding and data carrier technologies. This mechanism was provided by CIPS* set of criteria for “Maximising Returns from Purchasing Data”² through item classification and codification.

The standards below are for data carrier standards which may represent specific or variable data structures (product codes with specific characters and minimum - maximum number of characters). Among them, only EAN or UCC and HIBCC can be truly unique globally as the code structure and actual code numbers are controlled by central organisations. Without central control, there is no guarantee that codes are unique and immediately recognisable (Criterion 2).

The table below compares and evaluates the different ISO coding and data carrier standards against the CIPS standards:

* The Chartered Institute of Purchasing and Supply. Maximising Returns from Purchasing Data. November 2002. <http://www.cips.org/downloads/Professional%20Resources/Overview/codingclass.pdf>

Coding & Data Carrier Standards		EAN/UPC set	Code 39 (HIBC)	Inter leaved 2 of 5	Code 128	PDF 417	Maxi code	Data Matrix	QR Code
Code symbology (Types of Data Carriers)									
1	Application to multiple data carriers including linear bar code	Yes	Yes	No	No	No	No	No	No
Code integrity									
2	Globally unique codes	Yes	Yes	No	No	No	No	No	No
3	Standard data structure	Yes	Yes	No	No	No	No	No	No
4	ISO accredited	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	UK technical support & quality control	Yes	Limited	No	No	Yes	No	Yes	Limited
6	Code structure consistency and verification	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
7	Independent standard	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Code relevance									
8	Long-term future of standard	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
9	Generic: applicable to retail and healthcare market	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
10	Penetration in retail and healthcare market internationally	Yes	Yes	No	Yes	No	No	No	No
11	Common understanding of and access to codes by all stakeholders	Yes	Yes	No	Yes	No	No	No	No
Code related costs & compatibility									
12	Costs and ease of adoption, maintenance and migration from other codes	Fixed	Fixed	Variable	Variable	Variable	Variable	Variable	Variable
13	Cost structure incl. joining fee, cost of new codes and cost of maintenance	Fixed	Fixed	Bespoke	Bespoke	Bespoke	Bespoke	Bespoke	Bespoke
14	Compatibility with other codes for cross-referencing	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Final score									
		14/14	13/14	6/14	8/14	7/14	6/14	7/14	7/14

5.3 EAN.UCC because...

NHS PASA recommend the use of EAN.UCC in the English NHS because it is the one standard out of all other ISO standards that satisfies the criteria that PASA decided was key to selection. Specifically, EAN.UCC is:

1. Available in linear symbology, which is the most widely used anywhere in the world.
2. A unique and secure numbering system.
3. ISO accredited.
4. Present in UK for resolving any type of customer query.
5. A consistent code structure, immediately recognisable.
6. Independent and a not-for-profit organisation, found for the benefit of companies of any size, anywhere in the world.
7. Here to stay, with 1m users, 5bn transactions per day in 129 countries with future proof: ebXML, RFID, RSS and plans: EPC, two-dimensional symbology.

8. Code structure is numeric and non-significant, and therefore can apply to any industry.
9. Already present in many different sectors in the manufacture, retail and healthcare.
10. Integrated with many types of data carrier: bar code, RSS, RFID depending on application.
11. Widely available throughout the supply chain for any type of company so that total cost of implementation and integration is minimised.
12. Available at a standard cost which includes active support for companies that wish to implement it or migrate from other codes.
13. Available at a standard cost and inherently supports code integrity (failsafe code structure).
14. Is immediately compatible with current systems and has a failsafe element: Optical Character Recognition part for use even without reading scanners.
15. Built on the simple element of product identification with the choice of associated attributes being attached to the basic code in an identifiable way.
16. The standard of choice of an overwhelming number of suppliers nationally contracted by NHS PASA as a research conducted by NHS PASA in 2003 shows:
 - Pharmaceuticals: 80 (23%) of the 278 PASA suppliers of pharmaceutical products responded. The results were:
 - 64 suppliers (80%) use or plan to use bar codes in their operations. Of these 64 suppliers:
 - 92% use EAN or UPC
 - 3% use HIBCC
 - 5% use other codes.
 - 12 suppliers (15%) do not use nor plan to use bar codes in their operations
 - 4 suppliers (5%) were distributors and answered Not Applicable.
 - Healthcare & Non-healthcare (excluding Pharmaceuticals): 468 (48%) of the 982 PASA suppliers of non-pharmaceutical products responded. The results are:
 - 239 (51%) use or plan to use bar codes in their operations. Of these 235 suppliers:
 - 74% use EAN or UPC
 - 8% use HIBC
 - 8% use other codes
 - 10% don't know what they use.
 - 229 suppliers (49%) do not use nor plan to use bar codes in their operations.

6. Conclusion

During 2003 PASA went through a process of evaluation and comparison of all possible options and standards for the automatic identification and demand capture of products supplied to the English NHS. PASA concluded that EAN.UCC should be the one global coding standard and that it should be adopted, controlled and maintained by all suppliers in the total NHS supply chain for all products supplied to the NHS independent of supply chain entry level.

The only exclusion to this recommendation is where products are already bar coded using the HIBC set of standards. Suppliers using HIBC may continue to do so for the foreseeable future.

Contacts

- **ecentre** serves its 16000+ UK members by developing and supporting the **EAN-UCC** system for uniquely numbering and automatically identifying products, services, assets and trading locations. ecentre is the UK franchise of EAN International. This global system forms the basis of interoperable solutions for asset tracking, traceability, collaborative planning, order management and logistics. It brings speed and certainty to the supply chain ensuring that the right goods and services reach the right place at the right time.

As well as helping its members implement current bar coding systems and business-to-business communications such as EDI (Electronic Data Interchange), **ecentre** strives to support members' future needs by playing a leading role in international initiatives for new standards and solutions, including the emerging ebXML (electronic business extensible mark-up language) standards for business communications, reduced space symbology bar codes and radio frequency identification tags.

Further information about ecentre can be found at www.e-centre.org.uk, via email at Helathcare@e-centre.org.uk or via the **ecentre** helpdesk on 020 7655 9001.

- **NHS PASA**

Ms Judie Finesilver (pharmaceuticals)
pharmaceuticals)
Judie.finesilver@pasa.nhs.uk

Ms Efi Rigopoulou (non-

efi.rigopoulou@pasa.nhs.uk

NHS Purchasing and Supply Agency

Premier House, 60 Caversham Road
Reading, RG1 7EB
Berkshire, England

- **NHS Logistics Authority**

Mr John Watson
John.Watson@logistics.nhs.uk

NHS Logistics
Foxbridge Way
Normanton, WF6 1TL
West Yorkshire, England

Glossary

AIDC:

Automatic Identification and Data Capture. It encompasses a range of data carrier technologies including linear bar codes, 2-dimensional, multi-row or matrix bar codes, magnetic stripe cards, smart cards, RFID and other Smart Labels.

AIM:

Automatic Identification Manufacturers, Inc., the worldwide association representing the AIDC industry, is the source for technically accurate, unbiased, commercial-free, and up-to-date information on all AIDC technologies.

Bar code:

An automatic identification technology which encodes information into an array of varying width parallel rectangle bars and spaces.

Code 128:

A full alphanumeric bar code capable of encoding all 128 ASCII characters.

Code 39:

(3 of 9 Code). A full alphanumeric bar code consisting of nine modules, three of which are wide.

Data Carriers:

The range of media used to apply a code symbology on a product. Linear bar codes, 2-D bar codes, stacked bar codes, Serial Shipping Container Codes, RFID, Smart Labels and Magnetic Cards are examples of Data Carriers.

Data Matrix/ Dot Matrix:

A system of printing where individual dots are printed in matrix (5x7, 7x9, etc.) forming bars, alphanumeric characters, and simple graphics.

Data set:

A set of data carriers.

EAN.UCC:

European Article Numbering System is an open Global supply chain and transactional standard administered in the UK by the e.centre.

EDI:

Electronic Data Interchange.

HIBCC:

Healthcare Industries Bar Code Council is a not-for-profit American organisation. In Europe codes are controlled and allocated by EHIBCC (European HIBCC).

HIBC:

Health Industry Bar Code. A healthcare specific code standard developed by American healthcare companies.

Identifier:

Symbology representing the data set.

Interleaved Two of Five Code:

(I 2/5) A number-only bar code symbology consisting of five bars, two of which are wide. In this code both the bars and spaces carry information.

ISO:
International Organization for Standardization.

PDF417:
A 2D Stacked bar code symbology.

QR Code:
A 2D Matrix bar code symbology.

Radio Frequency Tag:
An electronic tag capable of receiving/storing and/or transmitting digital information by means of, and in response to, RF energy.

Reduced Space Symbology:
Bar code symbology developed by EAN for space constrained situations.

RF:
Radio Frequency. An electro-magnetic wave.

RFID:
Radio Frequency Identification.

Scanner:
An electronic device to read bar codes that electro-optically converts bars and spaces into electrical signals. For RF systems see "Interrogator".

Standard:
A set of rules, specifications, instructions and directions to use a bar code or other automatic identification system to your profit. Usually issued by an organization, e.g. Logmars, HIBCC, EAN.UCC, etc.

UCC:
Uniform Code Council; the organization which administers the U.P.C. and other retail standards. UCC and EAN merged in 2002 to form EAN.UCC organisation.

UPC:
Universal Product Code - The standard bar code symbol for retail food packages in the United States. In Europe, EAN is the equivalent.