

New Zealand Health Sector Bar Code Audit July 2005 v2

Introduction

Machine-readable product identification via bar coding has been identified by overseas regulators, clinicians and other health industry participants as a key enabler for:

- Improving patient safety;
- Improving the operational efficiency of the health supply chain; and
- Lowering costs throughout the health sector.

Although bar coding has been around for almost 30 years and is proven in the health sector to reduce errors and enhance efficiency, the penetration of such technologies in the Australian and New Zealand health sectors is very low.

To many observers, the sector appeared to be caught in a 'chicken & egg' scenario, where those who wish to derive the safety and efficiency benefits of scanning cannot because too little of the product used in the health sector is scannable; conversely manufacturers do not provide scannable product because it is not mandated and few in the sector are scanning. However, there was no data available in the New Zealand market on the penetration of bar codes on health supplies.

To provide baseline data for the New Zealand health sector, GS1 New Zealand was asked to conduct an audit and gather statistics of the number and types of bar codes already in use on products in that sector's supply chain. GS1 New Zealand acknowledges the assistance of Walker Datavision and Health Support Limited (HSL), who provided access to their Auckland warehouse and assistance in conducting this audit. It was conducted 12 /13 July 2005.

Method

804 of the randomly selected items from the inventory of HSL were examined by technical consultants for machine-readable product identifiers (bar codes). All levels of packaging (including unit dose, first level packaging, cartons or shippers) were examined. Any bar codes found were identified and noted¹.

¹ For details of method and a summary of bar code symbologies found, please see Appendices 1 & 2.

Results

Of the 804 items examined 356 (44%) were identified by HSL as being primarily destined for the hospital 'channel' (primarily District Health Boards) and 448 (56%) primarily for supply to community pharmacies. Of the 804 items 270 (34%) were Medical/Surgical products and 534 (66%) were pharmaceutical products.

Lowest Level (Unit dose) items

Only (40%) of unit dose packaging was identified with a machine-readable bar code. A small percentage of unit dose pharmaceutical items were inaccessible for inspection, and may or may not have had identifiers. Of the remainder, the dominant identifiers were from the GS1 System (either EAN-13, EAN-8 or UPC-A bar code symbologies; see Appendix 2). A small percentage of product had EAN-128 bar codes, which provide both product identification and batch code / expiry information useful for traceability (labelled 'EAN with Traceability' in the charts). A higher percentage of product supplied into community pharmacies had bar codes; most likely this is because of demands by the retail pharmacy trade to scan product at point of sale. A low percentage (19.30%) of medical/surgical products were bar coded, whereas a higher percentage of pharmaceutical products were bar coded (50.34%).

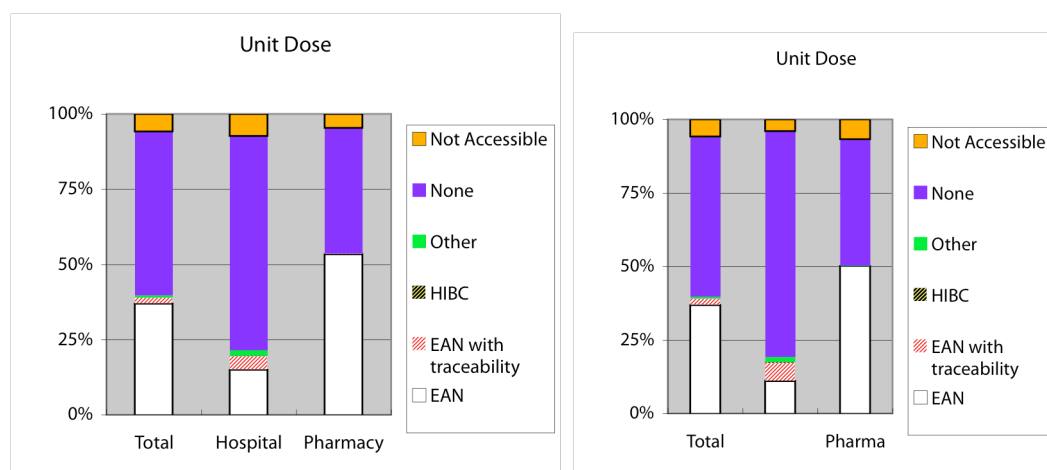


Figure 1 & Figure 2– Bar Codes on Unit Dose (By Channel & by Product Range)

Packaging

A majority of items had bar codes on the packaging that could be useful for automatically identifying the product by means of scanning. Typically the packaging was what would be normally recognised as a 'retail pack', but in some cases was a carton (or shipper) within which a large number of unit doses were enclosed (for example surgical drapes or catheters). As shown in Figure 3, 88% of bar codes found were GS1 System bar codes (EAN-8, EAN-13, UPC-A or EAN-128). Other bar code symbologies present were the Health Industry Bar Code (HIBC) or proprietary/in-house bar codes (labelled as 'Other'). As could be expected, a higher percentage of bar codes with full traceability information was found (EAN-128; labelled 'EAN with Traceability' in the charts).

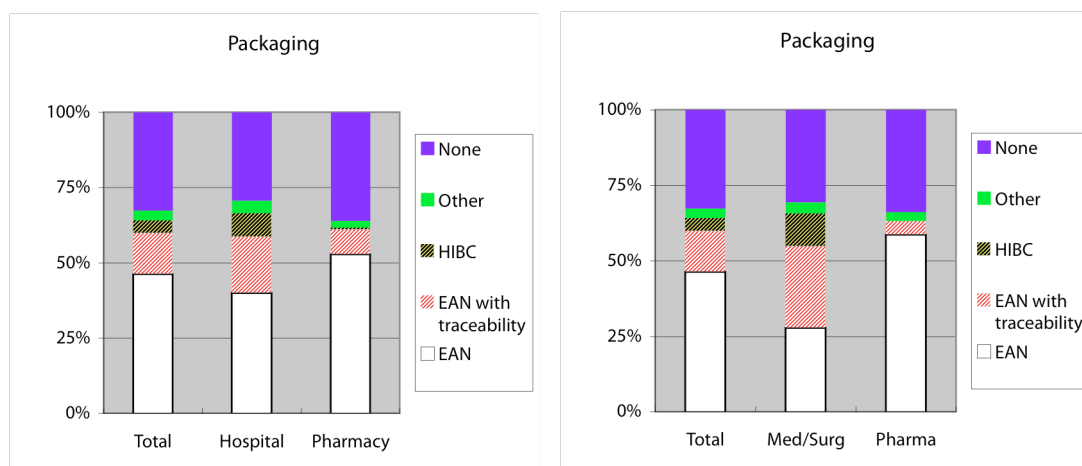


Figure 3 & Figure 4- Bar Coding on Packaging – (By Channel & by Product Range)

Global Comparisons

Directly comparable data is difficult to obtain. Figures 5 & 6 would suggest that New Zealand's overall penetration of machine-readable product identification is broadly similar with other jurisdictions where directly comparable data is readily available (international data supplied by GS1 International from a 2003 survey).

Since 2003 many countries have markedly increased bar coding on pharmaceuticals and medical devices. Some countries have moved to mandate or strengthen regulatory support for bar coding. In February 2004 the Federal Drug Administration Agency mandated bar coding on most pharmaceutical, human blood products and many medical/surgical products. In the United Kingdom bar code penetration on pharmaceuticals is currently 92%, and in 2004 a 'strong recommendation' from the UK National Health Service Purchasing & Supply Agency was issued to industry to move to 100% penetration coupled with a standardisation on GS1 System identifiers.

Many other countries mandate GS1 System identifiers on pharmaceuticals, including Norway, Sweden, Estonia, Thailand, India.

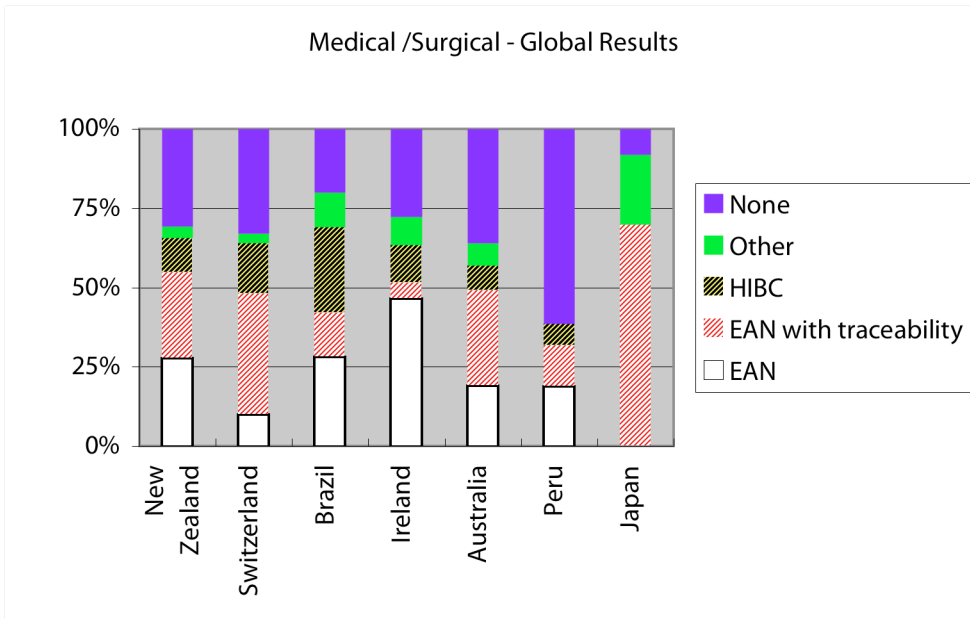


Figure 5 – Bar coding on medical / surgical products

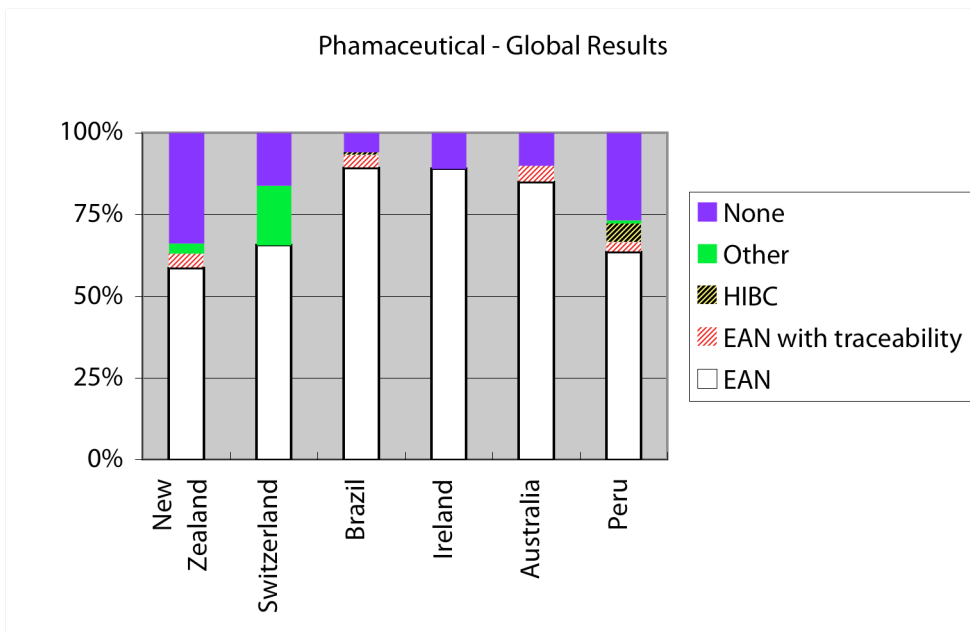


Figure 6 – Bar coding on pharmaceutical products

Appendix 1: Detailed Methodology

HSL provided GS1 NZ with a printout of their entire inventory. Items were classified on the inventory as “Pharmaceutical” or “Medical.” One thousand items were randomly identified by manually selecting any three lines on each page of the inventory. 1027 selected items were entered into electronic format in a database by keying HSL SKU and Prime Location numbers.

Items were examined for bar codes at the lowest possible level and at each level of packaging above that. For “Medical” items the lowest possible level meant a physical item – such as a drape or a catheter – that may or may not have had individual packaging. In the case of drugs it meant that the individual unit dose – the “each” in health sector terminology – was the first level examined for bar codes. In both cases the criterion used in deciding whether to consider a bar code absent was whether bar coding would be possible on the item as it presented during the study.

In the case of a bottle of a hundred loose tablets, for example, the “each” would be recorded as “not appropriate for bar coding” since applying bar codes to loose tablets is not possible without packaging redesign to individually package them. Tablets in blister packs that were currently capable of bearing a bar code if the maker decided to use them were recorded as “no bar code.” A “Medical” item that was physically large enough to bear a bar code would be assessed as “no bar code”.

Each item was then examined at the next two levels of packaging, if examples were available. If examples of that level of packaging were seen, the bar code, or absence thereof, was recorded. If no example was present, “not seen” was recorded.

The bottle of a hundred loose pills, for example, if it had an EAN-13 bar code on the bottle and no higher level of packaging was present, would be recorded as “not appropriate for bar coding” at the ‘each,’ or lowest, level, “EAN-13” at the next, and “not seen” at the next. In practical terms this would mean that there was a bar code that HSL or anyone else handling it could use, but that a hospital pharmacy seeking to track individual doses could not do so, without some sort of repackaging and labelling.

Because the lowest level of an item could be a physical item or a unit dose, and the unit dose could be a discreet item such as a tablet or a portion from a larger body of material, such as an application of cream from a jar, the term “lowest level” as used in this report needs to be interpreted according to context. “Lowest level” may or may not imply a package, depending on the nature of the item.

Bar codes were identified by their accepted names with the exception of Interleaved Two of Five (ITF), which is a GS1 bar code when used to encode EAN-14 numbers but which is also used by a wide range of other users for proprietary numbers. When used to encode EAN-14 numbers ITF is correctly called ITF-14 and this term was used in the study. ITF used with non-GS1 numbers was called ITF-X in this study.

Appendix 2: Common Bar Code Symbolologies

Standard Name	Symbology	Used for	Information Encoded
EAN-8 (Actual Size)	 2123 4569 >	Point of use (smaller items)	Product identifier
EAN-13 (Actual Size)	 9 421000 000011 >	Point of use	Product identifier
EAN-14 (Shown 50% reduction)	 1 9 4 1 2 3 4 5 6 7 8 9 0 1	Carton labelling	Product identifier
EAN-128 (Shown 50% reduction)	 (01)19412345000016 (17) 021202 (10) ABC123 (3102)001941	Point of use or carton labelling where supplemental data is required for traceability	Product identifier, other data, mainly batch code & expiry date
EAN RSS (& variants) (Actual Size)		Small items, point of use, normally where supplemental data is required for traceability but the item is very small	Product identifier, other data, mainly batch code & expiry date
EAN Data matrix (Actual Size)		Small items, point of use, normally where supplemental data is required for traceability but the item is very small	Product identifier, other data, mainly batch code & expiry date
Health Industry Bar Codes (HIBC)	 +H217J358G2Z	Proprietary bar codes only found on health sector items	Product identifier in one bar code, secondary bar code for supplemental data
	 +\$\$5952713C001LD		