HDA Guidelines for Bar Coding in the Pharmaceutical Supply Chain
Quick Start Guide

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This “Quick Start Guide” is a reference tool that can be used for evaluating and implementing a bar code solution — specifically, serialization to meet the requirements of the Drug Supply Chain Security Act (DSCSA), as well as FDA’s requirements for linear bar codes in 21 C.F.R. § 201.25. The Quick Start Guide was developed by members of the HDA (formerly HDMA) Bar Code Task Force as an update to the 2014 version of this guide and is a companion to the HDMA Guidelines for Bar Coding in the Pharmaceutical Supply Chain (or “Guidelines”). Refer to the Guidelines for further details and references. This 2016 Quick Start Guide update reflects lessons learned through the DSCSA implementation process and replaces the original document in the areas cited in the “Summary of Revisions.” The task force plans to make updates to the full Guidelines later this year.

FDA’s Bar Code Rule

FDA’s bar code rule, 21 C.F.R. § 201.25, requires an encoded, standardized linear bar code containing the National Drug Code (NDC) number on human prescription drugs, biologics and OTC drugs that are dispensed pursuant to an order and are commonly used in hospitals.

“Product Identifier” Bar Codes under the DSCSA

The DSCSA requires that within four years of enactment (November 27, 2017), a manufacturer shall affix or imprint a product identifier to each package and homogenous case of a product intended to be introduced in a transaction into commerce [§ 582(b)(2)(A)].

There are four key definitions included within the product identifier requirements of the DSCSA:

- A “product identifier” is “a standardized graphic that includes, in both a human-readable format and on a machine-readable data carrier that conforms to the standards developed by a widely recognized international standards development organization, the standardized numerical identifier (or SNI), lot number and expiration date of the product” [§ 581(14)].
- The “standardized numerical identifier” means a set of numbers or characters used to uniquely identify each package or homogenous case that is composed of the [NDC] that corresponds to the specific product (including the particular package configuration) combined with a unique alphanumeric serial number of up to 20 characters” [§ 581(20)].
- This product identifier must be affixed to a “package” or ‘homogenous case.”
  - A “‘package’ means the smallest individual saleable unit of product for distribution by a manufacturer or repackager that is intended by the manufacturer for ultimate sale to the dispenser of such product” [§ 581(11)(A)].
  - A “‘homogeneous case’ means a sealed case containing only product that has a single [NDC] number belonging to a single lot” [§ 581(7)].

The “Quick Start Guide” provides recommendations on both linear bar codes and product identifier bar codes.
THE GTIN AND GTIN ALLOCATION RULES

The Global Trade Item Number or “GTIN” is the GS1 identification key used to identify trade items. The key comprises a GS1 Company Prefix, an item reference and a check digit. GTINs:

- Are assigned by the manufacturer of the product.
- Uniquely identify a product at each packaging level at which there is a need to retrieve predefined information. A separate unique GTIN is required whenever any of the predefined characteristics of an item are different in any way that is relevant to the trading process.
- Are used for any item which may be priced, ordered or invoiced at any point in the supply chain.

Components of a GTIN-14

The GTIN-14 comprises an indicator digit, the GS1 Company Prefix, the Food and Drug Administration (FDA) NDC number and a check digit. Below is a graphic representation:

Segments of a GTIN-14 that embed an NDC

Source: GS1 Healthcare US Implementation Guideline, R.1.1, Section 5.3

To construct a GTIN-14, take your GS1 Company prefix (which will be the same as your FDA labeler code if you registered it with GS1), combine it with the product and package configuration codes from your NDC (which should be 10 digits), and place an indicator digit at the front and a check digit at the end.

For more information on GTINs and GTIN allocation rules, refer to: GS1 General Specifications, GTIN Allocation Rules, GS1 Healthcare GTIN Allocation Rules and GS1 Healthcare US™, Healthcare Supplier Toolkit Global Trade Item Number®.
THE SERIAL SHIPPING CONTAINER CODE (SSCC)

The SSCC is used to identify logistics units, but it is also used on trade items when they are also logistics units.

With varying practices across the industry, which potentially may create errors in scanning and tracking specific case quantities when receiving end-of-line cases, the 2016 Quick Start Guide aligns with the GS1 Healthcare US Implementation Guideline: Applying GS1 Standards to U.S. Pharmaceutical Supply Chain Business Processes\(^2\) and recommends the use of SSCCs for partial cases.

The Quick Start Guide provides recommendations on both linear bar codes and DSCSA product identifier codes.

\(^2\)GS1 Healthcare US Implementation Guideline: Applying GS1 Standards to the U.S. Pharmaceutical Supply Chain Business Processes for the Drug Supply Chain Security Act and Traceability R1.1 September 12, 2014
SUMMARY OF REVISIONS

Below is a list of the significant changes from the previous 2014 version of the HDMA Quick Start Guide. These changes are summarized here and presented in further detail throughout the revised 2016 Quick Start Guide. Revisions include:

- The addition of a recommendation for a wrap-around case label.
- A change in the placement of the 2D GS1 DataMatrix symbol on the case label to the outer edges of the label, away from the carton edge.
- Updates to the information encoded in the 2D GS1 DataMatrix symbol.
- New guidance on inner pack labels.
- Inclusion of recommendation to use a SSCC for partial cases.

Explanation of changes:

- The 2016 Quick Start Guide recommends a single, wrap-around case label with the 2D bar code justified to the outer edges of the label. Placement of the 2D symbol in the manner described will help prevent the 2D symbol from becoming unreadable due to misalignment of the label at the corner of the case. The intent of a single wrap-around label is to decrease the likelihood that a package would be mislabeled with separate case labels having different serial numbers.

- As the pharmaceutical supply chain moves toward DSCSA implementation and product serialization using GTINs (and Serialized GTINs or “SGTINS”) and associated master data, the 2016 Quick Start Guide changes the information recommended in the 2D GS1 DataMatrix symbol to be GTIN, Serial Number, Expiry and Lot — AI (01) + AI(21) + AI (17) +AI(10) — with use of application identifiers (AIs) as described by GS1. Inclusion in the GS1 DataMatrix symbol of the explicit case quantity represented by AI(30) is not in accordance with GS1 General Specifications and GS1 standards no longer permit it. However, during a transition period where the historical GS1-128 primary and secondary linear bar code symbols are still in use, case quantity using AI(30) in the secondary symbol will continue to be used.

- Though inner packs are being used by the industry, there is currently no recommendation for their identification and bar code marking. The 2016 Quick Start Guide includes guidance on inner packs (also commonly known as bundles, sleeves, trays, etc.), which companies may use as they begin to serialize and aggregate products. The 2016 Quick Start Guide recommends using a unique GTIN (that reflects the difference in quantity between an individual saleable unit, the inner pack and the homogenous case pack) and a 2D GS1 DataMatrix with a corresponding human readable label on inner pack labels.

- The 2014 Quick Start Guide did not make a recommendation on the use of an SSCC for a partial case, such as on the last case that comes off the packaging line. With varying practices across the industry, which potentially may create errors in scanning and tracking specific case quantities when receiving end-of-line cases, the 2016 Quick Start Guide aligns with the GS1 Healthcare US Implementation Guideline: Applying GS1 Standards to U.S. Pharmaceutical Supply Chain Business Processes and recommends the use of SSCCs for partial cases.

UNIT-LEVEL BAR CODES

Unit-level bar codes are the bar codes that are affixed to the lowest saleable trade unit, consisting of the NDC number and the DSCSA Product Identifier [the Product Identifier includes the NDC number].

Linear Bar Code
Under FDA’s bar code rule, 21 C.F.R. §201.25, manufacturers, repackers, relabelers and private label distributors of human prescription drug products, biological products and OTC drug products that are dispensed pursuant to an order and are commonly used in hospitals are subject to the bar code requirement. These products must have on their labels a bar code that contains, at a minimum, the appropriate NDC number in a linear bar code that meets European Article Number/Uniform Code Council (EAN.UCC) or Health Industry Business Communications Council (HIBCC) standards.

The NDC number is a 10-digit number used to identify pharmaceuticals in the U.S. healthcare industry. The NDC is presented in one of three hyphenated, human-readable formats; these are referred to as “4-4-2,” “5-3-2” or “5-4-1.” The first field of four or five digits identifies the manufacturer/labeler of the product. The next field of three or four digits identifies the product, dosage form and strength. The final field of one or two digits identifies the individual trade package size or stock-keeping unit (SKU). Labelers assigned a five-digit identifier can choose either a “3-2” or “4-1” product and package size code structure.

To encode an NDC in a UPC bar code, the GS1 US prefix “3” is encoded first, followed by the 10 digit NDC and a check digit. The dashes are not encoded in the bar code — they are only shown in the human-readable format (See the GS1 US website for check digit calculations, at http://gs1us.org/resources/tools/check-digit-calculator). Contact GS1 US for information about how to match an FDA-assigned Labeler Code to the corresponding GS1US-assigned U.P.C. Company Prefix beginning with “3.”

This 2016 Quick Start Guide does not recommend the removal of linear bar codes as they are heavily used throughout the entire supply chain. Supply chain computer systems, third-party prescription claims processing and sales tracking, reporting and industry support services all use the NDC to identify, describe and pay for pharmaceutical services. It also is important for all drug manufacturers to register their labeler code with GS1 US.
PRODUCT IDENTIFIER BAR CODE

As explained above, the DSCSA requires that by November 27, 2017, a manufacturer shall affix or imprint a product identifier to each package and homogenous case of a product [§ 582(b)(2)(A)]. A “product identifier” is “a standardized graphic that includes, in both a human-readable format and on a machine-readable data carrier that conforms to the standards developed by a widely recognized international standards development organization, the standardized numerical identifier [SNI], lot number, and expiration date of the product” [§ 581(14)]. The SNI is “a set of numbers or characters used to uniquely identify each package or homogenous case that is composed of the [NDC] that corresponds to the specific product (including the particular package configuration) combined with a unique alphanumeric serial number of up to 20 characters” [§ 581(20)].

To implement a product identifier that aligns with DSCSA requirements, the 2016 Quick Start Guide recommends encoding NDC [AI (01) + 14 digit GTIN], unit-level serial number [AI(21) + 1-20 digit serial number, expiration date [AI(17)+ 6 digit date in YYMMDD format] and lot number [AI(10) +1-20 alphanumeric lot number] using the 2D GS1 DataMatrix (referred to in this document as “GS1 DataMatrix”) Bar Code. A valid day should be used in the AI (17) six digit date so that the expiration date encoded exactly matches electronic data passed between trading partners.

The combination of GTIN + Serial Number (SGTIN) must be unique to comply with the DSCSA.

**HDMA suggests that the encoded data could appear as:**

```
<FNC1> + AI (01) + GTIN + AI (21) + Serial Number + <FNC1> + AI (17) + Expiration Date + AI (10) + Lot Number
```

The first FNC1 is used to indicate that this is a GS1 bar code. The second FNC1 encoded as the character Group Separator, and often denoted by the convention “<GS>” or “GS” is used to terminate the variable length serial number prior to starting the next AI. Since the lot number is the last data element encoded in the bar code, it is unnecessary to terminate this variable-length field using FNC1. The parentheses are not encoded in the bar code — they are only shown in a human-readable format.

Generally, to convert the GTIN-12 within a UPC-A bar code into a GTIN-14 format for use in the GS1 DataMatrix bar code add “00” as a prefix to the 12 digit UPC at the unit of sale.
INNER PACKS

If inner packs (also known as bundles, sleeves, trays, etc.) are labeled, the 2016 Quick Start Guide recommends including at minimum a 2D GS1 DataMatrix and a corresponding human-readable format. The GS1 DataMatrix encodes human readable listed: AI (01) + GTIN + AI (21) + Serial Number + AI (17) + Expiration Date + AI (10) + Lot Number. See example below. Note that the layout below is only one potential variation.

A unique GTIN — distinct from the GTIN assigned to the unit of sale and distinct from the GTIN of the homogenous case pack — would be necessary for the inner pack.

Scan of GS1 DataMatrix code produces following string without parentheses:

(01)0030930000003(21)100000000478(17)150131(10)12345678

GTIN Number (01): 0030930000003
Serial Number (21): 100000000478
Expiration Date (17): 150131
Batch Number (10): 12345678

Note: The example here does not encode the quantity and only represents one potential variation of an inner pack label.
CASE-LEVEL BAR CODE (HOMOGENEOUS FULL CASE)

In accordance with the DSCSA, the 2016 Quick Start Guide recommends encoding NDC [AI (01) + 14 digit GTIN], serial number [AI (21) + 1-20 digit serial number], expiration date [AI (17) + 6 digit date in YYMMDD format] and lot number [AI (10) + 1-20 alphanumeric lot number] and case quantity [AI(30) + 1-8 digit case quantity] using two GS1-128 bar codes and one GS1 Data Matrix. Inclusion in the GS1 DataMatrix symbol of the explicit case quantity represented by AI(30) is not in accordance with GS1 General Specifications and GS1 standards no longer permit it. However, during a transition period where the historical GS1-128 primary and secondary linear bar code symbols are still in use, the inclusion of case quantity using AI(30) in the secondary linear bar code will continue to be the recommended practice.

The combination of GTIN + serial number (SGTIN) must be unique to comply with the DSCSA.

The 2016 Quick Start recommends a case label format that includes two distinct GS1-128 bar codes on the label (one placed directly above the other) and one GS1 DataMatrix bar code. The primary case GS1-128 bar code (bottom bar code) encodes the GTIN and the case serial number. The secondary case bar code (top bar code) encodes the expiration date, lot number, and quantity. The GS1 DataMatrix bar code combines all data elements from both primary and secondary GS1-128 bar codes.

HDA suggests that the encoded data in the case primary GS1-128 bar code could appear as:

\[ \text{<FNC1> + AI (01) + GTIN + AI (21) + serial number} \]

The FNC1 is used to indicate that this is a GS1 Data Matrix.

HDA suggests that the encoded case secondary GS1-128 bar code could appear as:

\[ \text{<FNC1> + AI (17) + Expiration Date + AI (10) + Lot Number + <FNC1> + AI (30) + Case Quantity} \]

The first FNC1 is used to indicate that this is a GS1 Data Matrix. The second FNC1 (transmitted by the scanner as the character Group Separator, and often denoted by the convention “<GS>” or “GS”) is used to terminate the variable length serial number prior to starting the next AI. Since the case quantity is last data element encoded in the bar code it is unnecessary to terminate this variable-length field using FNC1. The parentheses are not encoded in the bar code — they are only shown in a human-readable format.
# 2016 HDA Shipping Case Product Identification Label – Summary Specifications

## Bar Code Symbolologies, Encoded Data Elements, Human-Readable Interpretation (HRI) & Print Quality

<table>
<thead>
<tr>
<th>Important Parameters</th>
<th>Format #1 – GTIN + SERIAL NUMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Symbology</strong> (see Note 1)</td>
<td><strong>Primary:</strong> GS1-128 (incl. FNC1 where req’d)</td>
</tr>
<tr>
<td></td>
<td><strong>Secondary:</strong> GS1-128 (incl. FNC1 where req’d)</td>
</tr>
<tr>
<td></td>
<td><strong>(2D) Prim + Exp &amp; Lot:</strong> GS1 DataMatrix (incl. FNC1 where req’d)</td>
</tr>
<tr>
<td><strong>Encoded Data Elements</strong> (see Note 2 and Note 3)</td>
<td><strong>Primary:</strong> GTIN-14 + SN (aka S-GTIN): Al(01)+Al(21)</td>
</tr>
<tr>
<td></td>
<td><strong>Secondary:</strong> EXP + LOT + QTY: Al(17)+Al(10)+Al(30)</td>
</tr>
<tr>
<td></td>
<td><strong>(2D) Prim + Exp &amp; Lot:</strong> GTIN-14 + SN + EXP + LOT</td>
</tr>
<tr>
<td></td>
<td>Al(01)+Al(21)+Al(17)+Al(10)</td>
</tr>
<tr>
<td><strong>GS1-128 Bar Code Symbol X-dimension Primary &amp; Secondary</strong></td>
<td><strong>Preferred:</strong> 16.7-20.0 mils (0.0167-0.0200 in.)*</td>
</tr>
<tr>
<td></td>
<td><strong>Minimum:</strong> 13.3 mils (0.0133 in.)*</td>
</tr>
<tr>
<td></td>
<td>*Use largest X-dim that will fit on the label</td>
</tr>
<tr>
<td><strong>GS1-128 Bar Code Symbol Height Primary &amp; Secondary</strong></td>
<td><strong>Preferred:</strong> GTIN-14 + SN (aka S-GTIN): Al(01)+Al(21)</td>
</tr>
<tr>
<td></td>
<td><strong>Minimum:</strong> 0.75 inches</td>
</tr>
<tr>
<td><strong>Increased height can improve scannability</strong></td>
<td><strong>Secondary:</strong> EXP + LOT + QTY: Al(17)+Al(10)+Al(30)</td>
</tr>
<tr>
<td></td>
<td><strong>Minimum:</strong> 0.5 inches</td>
</tr>
<tr>
<td></td>
<td>0.4 inches</td>
</tr>
<tr>
<td><strong>GS1 DataMatrix (2D) Bar Code X-dimension</strong></td>
<td><strong>Preferred:</strong> 30.0 mils (0.0300 in.)</td>
</tr>
<tr>
<td></td>
<td><strong>Minimum:</strong> 30.0 mils (0.0300 in.)</td>
</tr>
<tr>
<td><strong>Bar Code Quiet Zones - MINIMUM Width</strong></td>
<td><strong>GS1-128:</strong> 10X (10 times X-dim; 0.20” min. recommended)</td>
</tr>
<tr>
<td></td>
<td><strong>GS1 DataMatrix:</strong> 3X (3 times X-dim; 0.10” min. recommended)</td>
</tr>
<tr>
<td><strong>Bar Code Quality - MINIMUM Grade</strong></td>
<td><strong>GS1-128:</strong> 1.5/10/660 (per GS1 &amp; ISO/IEC 15416)</td>
</tr>
<tr>
<td></td>
<td><strong>GS1 DataMatrix:</strong> 1.5/20/660 (per GS1 &amp; ISO/IEC 15415)</td>
</tr>
<tr>
<td><strong>Position of Bar Code Symbols on Label</strong></td>
<td><strong>(2D) Prim + Exp &amp; Lot:</strong> GS1 DataMatrix, the Upper Label Corner Farthest from the Case Corner Edge</td>
</tr>
<tr>
<td></td>
<td><strong>Primary:</strong> GS1-128, Directly Above Primary Symbol</td>
</tr>
<tr>
<td></td>
<td><strong>Secondary:</strong> GS1-128, Bottom of Label</td>
</tr>
<tr>
<td><strong>Bar Code Human-Readable Interpretation (HRI) Position &amp; Size</strong></td>
<td><strong>(2D) Prim + Exp &amp; Lot:</strong> None (though data IS NOT IDENTICAL to Prim. &amp; Sec.)</td>
</tr>
<tr>
<td></td>
<td><strong>Primary:</strong> Below GS1-128, 10 Point (8 pt. min.)</td>
</tr>
<tr>
<td></td>
<td><strong>Secondary:</strong> Below GS1-128, 10 Point (8 pt. min.)</td>
</tr>
<tr>
<td><strong>Secondary Data DESC.</strong></td>
<td><strong>Primary:</strong> Above GS1-128, 12 Point (10 pt. min.)</td>
</tr>
<tr>
<td><strong>Printing Process and Substrate</strong></td>
<td><strong>Primary:</strong> Thermal Transfer</td>
</tr>
<tr>
<td></td>
<td><strong>Secondary:</strong> Pressure-sensitive Label</td>
</tr>
<tr>
<td><strong>Label Skew</strong></td>
<td><strong>Primary:</strong> All Labels</td>
</tr>
<tr>
<td></td>
<td><strong>Secondary:</strong> +/- 2 Degrees from Horizontal**</td>
</tr>
<tr>
<td></td>
<td>****Approx. 0.15 inch Across a 4” Wide Label</td>
</tr>
</tbody>
</table>

**Note 1:** Primary (S-GTIN) and full secondary (EXP+LOT+QTY) data in separate GS1-128 symbols is required. In addition, primary (S-GTIN) and some secondary (LOT & EXP only) data are combined and encoded in a required 2D GS1 DataMatrix symbol.

**Note 2:** GS1-128 & GS1 DataMatrix symbols encode FNC1 at the beginning of the symbol; and as a variable-length field delimiter, as required.

- GTIN+SN: FNC1+Al(01)+GTIN+Al(21)+SN
- EXP+LOT+QTY: FNC1+Al(17)+EXP+Al(10)+LOT+FNC1+Al(30)+QTY
- GTIN+SN+EXP+LOT: FNC1+Al(01)+GTIN+Al(21)+SN+FNC1+Al(17)+EXP+Al(10)+LOT

**Note 3:** The GS1 DataMatrix symbol does NOT include Al(30)+QTY as an encoded data element. Inclusion in the GS1 DataMatrix symbol of the explicit case quantity represented by Al(30) is NOT in accordance with GS1 General Specifications. Al(30)+QTY should NOT be encoded in the GS1 DataMatrix symbol. However, during a transition period where the historical GS1-128 primary and secondary linear bar code symbols are still in use, the case quantity represented by Al(30) should continue to be encoded in the GS1-128 symbol carrying secondary data.

08 June 2016 Rev 1c
Product identification labels may be placed with the bar codes oriented in the “picket fence” orientation relating to the bottom of the case. That is, the bars should be perpendicular to the bottom edge of the case. The bottom edge of the label should be no closer than 1.25 inches from the bottom of the case.

The 2016 Quick Start Guide recommends product identification labels on two adjacent sides of the case. This can be achieved by using a wraparound label or using two separate but identical labels on adjacent sides. The 2016 Quick Start Guide recommends using a wrap-around label with 2D GS1 DataMatrix justified to the outer edges (see example below). When using a wrap-around label the left half of the product identification label would be affixed to the right-most side of the carton. Once wrapped around the carton edge, the right half of the label would then be positioned at the left-most side of the short side of the carton as shown in the illustration below. If two labels are used instead, labels would be placed on adjacent sides at least .75 inches from any vertical edge to avoid damage. For additional details on placement see GS1 General Specification, Section 6.

For additional case labeling and placement, refer to the HDMA Guidelines for Bar Coding in the Pharmaceutical Supply Chain.
LOGISTICS UNIT/SERIAL SHIPPING CONTAINER CODE (SSCC)

**Partial Case Label**
The 2016 Quick Start Guide recommends for partial case labels including at a minimum a GS1 Serial Shipping Container Code (SSCC) and the word “partial.” It is recommended that partial case labels not include a secondary linear bar code so that the design looks distinct from that of a homogenous full case.

![Example of Partial Case Label](image1)

**SHIPPING LABEL**
To support logistics, the 2016 Quick Start Guide recommends encoding the shipping label with GS1 Serial Shipping Container Code (SSCC) [AI (00) +18 SSCC on logistics units. The 2016 Quick Start Guide further recommends the SSCC label for pallets shipped by ground freight carriers. A logistics unit could be a pallet, a case or a tote.

The encoded logistics/SSCC GS1-128 bar code should appear as:

```
<FNC1>+ AI (00) + SSCC
```

The following diagram is an example of the recommended SSCC label, for pallets shipped by ground freight carriers, with each of its building blocks defined and described. For additional guidance, see the [GS1 Logistics Label Guideline](#).
**1. Ship-From Information**
Enter the origin address
Rec’d Font Size 10-12pt; Area 1” x 1 ¾”

**2. Ship-To Information**
Enter the customer warehouse address
Rec’d Font Size 10-12pt; Area 1” x 2 ¼”

**3. Ship-To Postal Code**
Enter as shown, with bar code of zip code below
Rec’d Font Size 10-12pt; Area 1” x 2”

**4. Shipper Information**
Include four-digit SCAC code of carrier, route (opt), bill of lading or carrier/PRO number
Rec’d Font Size 10-12pt; Area 1” x 2”

**5. PO Number**
Enter the customer PO number with bar code of the number below
Rec’d Font Size 20-24pt; Area 1” x 4”

**6. Expanded Supplier Name**
Enter the first seven characters of the supplier’s name
Rec’d Font Size 36-40pt; Area 1” x 2 ¾”

**7. Customer Warehouse ID**
Enter the four-digit Customer warehouse number (first four digits from PO number)
Rec’d Font Size 36-40pt; Area 1” x 1 ¼”

**8. SSCC**
Enter the SSCC Identifier with large bar code below
Rec’d Font Size 18-22pt; Area 2” x 4”

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**ADDITIONAL GUIDANCE**

- Providing enough white space/quiet zone around all bar codes will help ensure scanner readability.
- For non-homogenous cases, see the section on Logistics Unit/Serial Shipping Container Code (SSCC).
- Note that the 2D GS1 DataMatrix no longer includes case quantity using AI(30).
- For further information and recommendations related to barcoding, refer to the *HDMA Guidelines for Bar Coding in the Pharmaceutical Supply Chain*.
- For a full list of GS1 details and specifications, visit GS1US.org.

_HDA thanks GS1 US and GS1 Global for giving time and expertise to revise this publication._