

This document discusses product identification for supply chain and reimbursement purposes in Healthcare, describing the different scenarios and the GS1 Healthcare recommendations. The user group hopes this paper will assist the Healthcare sector in understanding the consequences of foundational decisions affecting accurate reimbursement, supply chain efficiency and ultimately patient safety. By weighing all options and objectives, GS1 Healthcare hopes to promote greater safety, security, and efficiency.

### Product identification in Healthcare

The Healthcare sector identifies products for reimbursement and for supply chain purposes (ordering, inventory control, track and trace). The GS1 Identification Key “Global Trade Item Number” (GTIN) is used all over the world to identify trade items (products and services) in various sectors. GTINs are used by brand owners and their supply chain partners, to retrieve pre-defined information about products.

### Product identification for reimbursement purposes: Different scenarios

Different scenarios exist to identify products for supply chain and reimbursement purposes:

- GTIN used in AIDC (Automatic Identification and Data Capture - bar code or RFID tag) and as a National Health Reimbursement Number (NHRN)
- GTIN used in AIDC, NHRN found through database cross-reference
- GTIN and NHRN used in same AIDC
- NHRN “embedded” inside GTIN number range to replace GTIN in AIDC
- GTIN not used in AIDC, NHRN used in AIDC

### GS1 Healthcare recommendations

1. GS1 Healthcare recommends stakeholders to use GTINs for supply chain and reimbursement purposes (**Option 1**). This is the most efficient and effective way for all stakeholders to identify products.
2. In case of an existing system of NHRNs, GTINs can be cross-referenced to the NHRN in a database (**Option 2**).
3. GTIN and NHRN can also both be used in AIDC (**Option 3**), but that is sub-optimal as it requires larger bar codes and adds complexity for cross-border trade and interoperability. GS1 Healthcare only recommends this as a migration path to Options 1 or 2.
4. The NHRN can also be embedded in the GTIN, creating a National Trade Item Number (NTIN) (**Option 4**), but this is also sub-optimal as there may be incompatibility issues with other industry standards, and, by definition, it prohibits reciprocity of packaging because the country using them typically does not permit GTINs/NTINs from other countries.

*GS1 Healthcare is a global, voluntary Healthcare user group developing global standards for the Healthcare supply chain and advancing global harmonisation. For more information visit: [www.gs1.org/healthcare](http://www.gs1.org/healthcare).*

### 1. GTIN as National Healthcare Reimbursement Number (NHRN)

|                    |  |
|--------------------|--|
| <b>Description</b> | This model uses the GTIN for reimbursement and trade in all databases. |
|--------------------|--|

**GTIN Data Structures**

<----- Digit Positions ----->

|                               |         |   |   |   |   |   |   |   |   |   |    |    |    |    |    |   |                |
|-------------------------------|---------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|---|----------------|
|                               |         | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |   |                |
| <b>Application Identifier</b> | ( 0 1 ) | 0 | 0 | 0 | 0 | 0 | 0 | N | N | N | N  | N  | N  | N  | N  | C | <b>GTIN-8</b>  |
|                               | ( 0 1 ) | 0 | 0 | N | N | N | N | N | N | N | N  | N  | N  | N  | N  | C | <b>GTIN-12</b> |
|                               | ( 0 1 ) | 0 | N | N | N | N | N | N | N | N | N  | N  | N  | N  | N  | C | <b>GTIN-13</b> |
|                               | ( 0 1 ) | N | N | N | N | N | N | N | N | N | N  | N  | N  | N  | N  | C | <b>GTIN-14</b> |

Where 0 (zero) is a filler digit, N is a numeric value 0-9, C is a Check digit numeric value 0-9.

| Stakeholder                                | For Reimbursement                      |  |
|--|--|--|
| Manufacturers                              | +                                      | <ul style="list-style-type: none"> <li>✓ One bar code on pack - less space on pack used.</li> <li>✓ Allows the sharing of packs across markets.</li> <li>✓ Allows GTIN allocation by brand owners.</li> </ul>  |
| Distributors, Wholesalers                  | +                                      | <ul style="list-style-type: none"> <li>✓ GTIN can be used for GDSN (Global Data Synchronisation Network) and across all levels of packaging</li> <li>✓ EPC ONS compatible</li> </ul>   |
| Pharmacists                                | +                                      | <ul style="list-style-type: none"> <li>✓ One code to scan</li> </ul>   |
| Government/ Health Authorities/ Regulators | +                                      | <ul style="list-style-type: none"> <li>✓ National databases use one number</li> <li>✓ No administration required to maintain the link between GTIN and national numbers</li> </ul>   |
| Stakeholder                                | For Supply Chain (trade, track, trace) |  |
| Manufacturers                              | +                                      | <ul style="list-style-type: none"> <li>✓ One bar code on pack - less space on pack used, totally aligned with SGTIN (serialization) application</li> <li>✓ Allows the sharing of packs across markets and GTIN allocation by brand owners</li> </ul> |
| Distributors, Wholesalers                  | +                                      | <ul style="list-style-type: none"> <li>✓ GTIN can be used for GDSN and across all levels of packaging</li> <li>✓ EPC ONS compatible</li> </ul>   |
| Pharmacists                                | +                                      | <ul style="list-style-type: none"> <li>✓ One code to scan</li> </ul>   |
| Government/ Health Authorities/ Regulators | +                                      | <ul style="list-style-type: none"> <li>✓ National databases use one number</li> <li>✓ No administration required to maintain the link between GTIN and national numbers</li> </ul>   |

### 2. GTIN-NHRN Cross Reference

**Description** This model uses the GTIN on the pack for supply chain and cross references GTIN to any local reimbursement or registration number in appropriate databases.

#### GTIN Data Structures

|                               |         | Digit Positions |   |   |   |   |   |   |   |   |    |    |    |    |    |         |
|-------------------------------|---------|-----------------|---|---|---|---|---|---|---|---|----|----|----|----|----|---------|
|                               |         | <----->         |   |   |   |   |   |   |   |   |    |    |    |    |    |         |
|                               |         | 1               | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |         |
| <b>Application Identifier</b> | ( 0 1 ) | 0               | 0 | 0 | 0 | 0 | 0 | N | N | N | N  | N  | N  | N  | C  | GTIN-8  |
|                               | ( 0 1 ) | 0               | 0 | N | N | N | N | N | N | N | N  | N  | N  | N  | C  | GTIN-12 |
|                               | ( 0 1 ) | 0               | N | N | N | N | N | N | N | N | N  | N  | N  | N  | C  | GTIN-13 |
|                               | ( 0 1 ) | N               | N | N | N | N | N | N | N | N | N  | N  | N  | N  | C  | GTIN-14 |

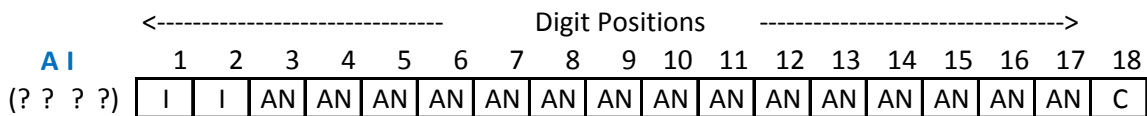
Where 0 (zero) is a filler digit, N is a numeric value 0-9, C is a Check digit numeric value 0-9.

| Stakeholder                                |   | For Reimbursement   |
|--|---|---|
| Manufacturers                              | - | <ul style="list-style-type: none"> <li>✓ One bar code on pack</li> <li>✓ Allows the sharing of packs across markets, GTIN allocation by brand owner</li> <li>❖ Additional administration to maintain and communicate link between GTIN and NHRN.</li> </ul> |
| Distributors, Wholesalers                  | + | <ul style="list-style-type: none"> <li>✓ GTIN can be used for GDSN and across all levels of packaging</li> <li>✓ EPC ONS compatible</li> </ul>  |
| Pharmacists                                | - | <ul style="list-style-type: none"> <li>✓ One code to scan</li> <li>❖ GTIN-NHRN cross reference must be built into application</li> </ul>  |
| Government/ Health Authorities/ Regulators | + | <ul style="list-style-type: none"> <li>✓ Allows seamless integration of NHRNs in AIDC through cross-reference so the process is transparent to regulators</li> </ul>  |
| Stakeholder                                |   | For Supply Chain (trade, track, trace)  |
| Manufacturers                              | + | <ul style="list-style-type: none"> <li>✓ One bar code on pack and aligned with SGTIN (serialisation) application</li> <li>✓ Allows the sharing of packs across markets</li> <li>✓ Allows GTIN allocation by brand owners.</li> </ul>                        |
| Distributors, Wholesalers                  | + | <ul style="list-style-type: none"> <li>✓ GTIN can be used for GDSN and across all levels of packaging</li> <li>✓ EPC ONS compatible</li> </ul>  |
| Pharmacists                                | + | <ul style="list-style-type: none"> <li>✓ One code to scan</li> <li>✓ GTIN for trade; NHRN for reimbursement.</li> </ul>   |
| Government/ Health Authorities/ Regulators | + | <ul style="list-style-type: none"> <li>✓ Allows seamless integration of NHRNs in AIDC so the process is transparent to regulators</li> </ul>  |

### 3. GTIN and NHRN Co-Existence Model

**Description** In this model both the GTIN and the national product number would appear within the same data carrier, using different application identifiers. The NHRN can be up to 15 alphanumeric characters but small numeric strings are advised.

#### NHRN in GS1 AI in Data Structures



Where ? is a numeric AI, I is a numeric Issuing Agency Code,  
AN is a alphanumeric NHRN, C is a Check digit numeric value 0-9.

| Stakeholder                                | For Reimbursement                      |  |
|--|--|--|
| Manufacturers                              | -                                      | <ul style="list-style-type: none"> <li>✓ One bar code</li> <li>❖ Additional data means larger bar code so fewer products marked with AIDC. May not be physically possible on some packs and technically difficult to achieve</li> <li>❖ Also limits the sharing of packs across markets</li> </ul> |
| Distributors, Wholesalers                  | +                                      | <ul style="list-style-type: none"> <li>✓ GTIN can be used for GDSN and across all levels of packaging</li> <li>✓ EPC ONS compatible</li> </ul>   |
| Pharmacists                                | -                                      | <ul style="list-style-type: none"> <li>✓ One code to scan</li> <li>❖ NHRN AI processing must be built into application</li> </ul>  |
| Government/ Health Authorities/ Regulators | +                                      | <ul style="list-style-type: none"> <li>✓ Allows seamless integration of NHRNs in AIDC through additional data element so the process is transparent to regulators</li> </ul>   |
| Stakeholder                                | For Supply Chain (trade, track, trace) |  |
| Manufacturers                              | -                                      | <ul style="list-style-type: none"> <li>✓ One bar code</li> <li>❖ Additional data means larger bar code so fewer products marked with AIDC. May not be physically possible on some packs and technically difficult to achieve</li> <li>❖ Also limits the sharing of packs across markets</li> </ul> |
| Distributors, Wholesalers                  | +                                      | <ul style="list-style-type: none"> <li>✓ GTIN can be used for GDSN and across all levels of packaging</li> <li>✓ EPC ONS compatible</li> </ul>   |
| Pharmacists                                | -                                      | <ul style="list-style-type: none"> <li>✓ One code to scan</li> <li>❖ NHRN AI processing must be built into application</li> </ul>  |
| Government/ Health Authorities/ Regulators | +                                      | <ul style="list-style-type: none"> <li>✓ Allows seamless integration of NHRNs in AIDC through additional data element so the process is transparent to regulators</li> </ul>   |

### 4. NHRN replaces GTIN (NTIN)

**Description** This model places the national product code into the GTIN field and creates what is sometimes referred to as an NTIN.

**"NTIN" Data Structures**

|                    |         |                               |    |    |    |    |    |    |    |    |    |    |    |    |    |                |
|--------------------|---------|-------------------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----------------|
|                    |         | <----- Digit Positions -----> |    |    |    |    |    |    |    |    |    |    |    |    |    |                |
|                    |         | 1                             | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 | 14 |                |
| <b>Application</b> | ( 0 1 ) | 0                             | 0  | 3  | N  | N  | N  | N  | N  | N  | N  | N  | N  | N  | C  | <b>NTIN-12</b> |
| <b>Identifier</b>  | ( 0 1 ) | 0                             | Np | Np | Np | Nn | Nn | Nn | Nn | Nn | Nn | Nn | Nn | Nn | C  | <b>NTIN-13</b> |

Where 0 (zero) is a filler digit, Np is numeric GS1 Prefix,  
Nn is a numeric NHRN value 0-9, C is a Check digit numeric value 0-9.

| Stakeholder                                | For Reimbursement                      |   |
|--|--|---|
| Manufacturers                              | -                                      | <ul style="list-style-type: none"> <li>❖ One bar code on pack means less space on pack</li> <li>❖ Limits the sharing of packs across markets</li> </ul>                                   |
| Distributors, Wholesalers                  | *                                      | * Depends on the compatibility of NHRNs with GTIN number pools; GTIN Allocation Rules; EPC ONS Syntax; May or may not be based on trade item identification (could be at commodity level) |
| Pharmacists                                | +                                      | ✓ One code to scan  |
| Government/ Health Authorities/ Regulators | *                                      | * Depends on the NHRN being compatible with GTIN number pools   |
| Stakeholder                                | For Supply Chain (trade, track, trace) |   |
| Manufacturers                              | -                                      | <ul style="list-style-type: none"> <li>❖ One bar code on pack means less space on pack</li> <li>❖ Limits the sharing of packs across markets</li> </ul>                                   |
| Distributors, Wholesalers                  | *                                      | * Depends on the compatibility of NHRNs with GTIN number pools; GTIN Allocation Rules; EPC ONS Syntax; May or may not be based on trade item identification (could be at commodity level) |
| Pharmacists                                | +                                      | ✓ One code to scan  |
| Government/ Health Authorities/ Regulators | *                                      | * Depends on the compatibility of NHRNs with GTIN number pools; GTIN Allocation Rules; EPC ONS Syntax   |