

DCB1077 Automatic Identification and Data Capture (AIDC) for Patient Identification Requirements Specification

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Information and technology
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Data Coordination Board

This information standard (DCB1077) has been approved for publication by the Department of Health and Social Care under [section 250 of the Health and Social Care Act 2012](#).

Assurance that this information standard meets the requirements of the Act and is appropriate for the use specified in the specification document has been provided by the Data Coordination Board (DCB), a sub-group of the Digital Delivery Board.

This information standard comprises the following documents:

- Change Specification
- Requirements Specification
- Implementation Guidance.

An Information Standards Notice (DCB1077 Amd 67/2018) has been issued as a notification of use and implementation timescales. Please read this alongside the documents for the standard.

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1 Glossary of Terms

Term	Definition
AIDC	Automatic Identification and Data Capture - a technology used to automatically capture data. AIDC technologies include barcodes, smart cards, biometrics and RFID.
Application Identifier (AI)	The GS1 Application Identifier is a field of two, three or four digits at the beginning of an element string that uniquely defines its format and meaning.
Barcode	Barcodes, also known as data carriers, are symbols which are encoded with data in a machine-readable pattern. They can be either a 1D (linear) or 2D format and are read with either laser or camera based scanners.
Birth Notification Service	A service provided by the NHS Digital Personal Demographics Service (PDS), that replaces the NHS number for Babies (NN4B) service which was decommissioned in 2015.
DCB	Data Coordination Board - DCB is a sub-group of the Digital Delivery Board (DDB) and is committed to ensuring the quality of standards, to ensure effective implementation, full realisation of benefits and minimal disruption for staff, patients and care users.
DHSC	Department of Health and Social Care – a ministerial department that leads, shapes and funds health and social care in England, making sure people have the support, care and treatment they need, with the compassion, respect and dignity they deserve. ⁰
GCP	GS1 Company Prefix - The GCP is used exclusively within GS1 identification standards and is a unique string of four to twelve digits used to issue GS1 identification keys. GCPs assigned to a member of any GS1 Member Organisation e.g. GS1 UK, and entitles that member to create any of the GS1 identification keys.
GLN	Global Location Number - a GS1 Identification key type which enables the unique and unambiguous identification of any type of location used in business processes.
GS1	GS1 is a not-for-profit organisation that develops and maintains global standards for business communication. The best known of these standards is the barcode, a symbol printed on products that can be scanned electronically.
GS1 DataMatrix	A type of matrix (2D or two-dimensional) barcode, which is printed as a square symbol and is made up of individual squares. GS1 DataMatrix is the ISO/IEC recognised and standardised implementation of the use of Data Matrix symbology.
GSMP	Global Standards Management Process - is a GS1 facilitated community forum which supports standards development activity for the GS1 system. The GSMP uses a global consensus process to develop supply chain standards that are based on business needs and user-input.
GSRN	Global Service Relation Number – a GS1 Identification key type that identifies the relationship between an organisation offering services and the recipient.
ISB	Information Standards Board for Health and Social Care was tasked with the independent assurance and approval of information standards for adoption by the NHS and social care up to 31 March 2014. Responsibility for the approval of Information Standards has transferred to the Data Coordination Board (DCB).

Term	Definition
ISN	Information Standards Notice – is a notice of an Information Standard and Collection (including extraction) approved by the Data Coordination Board (DCB)
Modulo 10	The name of the algorithm – a simple checksum formula in the public domain – used to create a check digit for those GS1 identification keys that require one.
NHS I	National Health Service Improvement - support the NHS to deliver improved care for patients.
ODS	The NHS Organisation Data Service is provided by NHS Digital and is responsible for publishing codes that identify organisations and individuals across health and social care.
PAS	Patient Administration System(s) – is a core component of a hospital's IT infrastructure.
RFID	Radio Frequency Identification - A data carrier technology that transmits information via signals in the radio frequency portion of the electromagnetic spectrum. A radio frequency identification system consists of an antenna and a transceiver, which read the radio frequency and transfer the information to a processing device, and a transponder, or tag, which is an integrated circuit containing the radio frequency circuitry and information to be transmitted.
SRIN	Service Relation Instance Number is an attribute to the GSRN which allows for distinguishing different encounters during the same episode

2 Supporting Information

2.1 Related Standards

Related Standards **MUST** be used and read alongside this document.

Reference	Title
ISB 0108	AIDC: Automatic Identification and Data Capture
ISB 0099 *	Patient Identifiers for Identity Bands
ISB 0149	NHS Number Standard Specification
ISB 1555	Birth Notifications
DCB0129	Clinical Risk Management: its Application in the Manufacture of Health IT Systems
DCB0160	Clinical Risk Management: its Application in the Deployment and Use of Health IT Systems
ISBT 128	Identification, labelling and information processing of human blood, tissue and organ products
ISO/IEC 15415	Information technology; automatic identification and data capture techniques; barcode print quality test specification; two-dimensional symbols
ISO/IEC 15426-2	Information technology; automatic identification and data capture techniques; barcode verifier conformance specification - Part 2: Two-dimensional symbols
ISO/IEC 16022	Information technology; automatic identification and data capture techniques; Data Matrix barcode symbology specification

* Please note, only a DSCN is available for ISB 0099 currently.

2.2 Supporting Guidance

Supporting Guidance **MAY** be used and read alongside this document.

Reference	Title
N/A	Learning from patient safety incidents
N/A	Newborn blood spot (NBS) screening programme
Release 19.1 *	GS1 General Specifications
Release 2.5.1	GS1 DataMatrix Guideline: an introduction and technical overview

* GS1 General Specifications are regularly updated, so whilst a release number is noted here for reference, the link provided will always direct users to the most recent version of the document.

3 Overview

STANDARD	
Standard Number	DCB1077
Title	Automatic Identification and Data Capture (AIDC) for Patient Identification
Release	Amd 67/2018
Type	Information Standard
Definition	<p>This Standard defines how to encode the NHS approved patient identifiers for identity bands into the GS1 DataMatrix barcode (a two-dimensional barcode) and covers production, verification and printing rules for the barcode. The resulting data set is the Automatic Identification and Data Capture (AIDC) for Patient Identification Data Set.</p> <p>Previously known as ISB 1077, DCB1077 has been updated to align with Patient Identification requirements of NHS Improvement and ensure compliance to GS1 Standards. This release includes an update to the existing data set and supporting information, summarised below:</p> <ul style="list-style-type: none"> • New data items introduced: <ul style="list-style-type: none"> ○ Service Relation Instance Number (SRIN) for episode information ○ Global Location Number (GLN) to identify a hospital location • Amended data item numbers, data item names, data format and inclusion requirements (i.e. Mandatory, Required or Optional) • Supporting Information updated to remove and replace deprecated and withdrawn references • Conformance criteria updated to provide corresponding criterion for each MUST/MUST NOT requirement <p>Please review the related Change Specification for full details of changes.</p>
Background	<p>This technology enabling standard supports the accurate, timely and therefore, safer identification of NHS patients in England, by using open standards for positive patient identification. The standard uses ISB 0099: Patient Identifiers for Identity Bands and the GS1 System of Standards for code numbering and barcoding, which is outlined in ISB 0108: AIDC: Automatic Identification and Data Capture.</p>
Benefits	<p>Implementation of this standard will enable subsequent processes involving the patient and care provided to the patient (where these processes are also uniquely identified and barcoded) to be automatically identified using AIDC techniques, e.g. bed management, phlebotomy, theatre management and medications administration.</p> <p>Updates to the AIDC for Patient Identification Data Set have improved “Episode Information” to distinguish between different encounters of the same episode and include location information for users to identify the hospital where the wristband was printed or applied to the patient. At this point, the full patient safety, cost and efficiency benefits of the standard will be realised as the 5 Ws (who, what, where, when and how) are able to be identified.</p>
Scope	<p>This standard needs to be reviewed and implemented alongside the current AIDC Fundamental Standard ISB 0108: AIDC: Automatic Identification and Data Capture and its related standards and guidance outlined in Sections 1.2 and 1.3.</p>

STANDARD	
	<p>The following are out of scope for this Operational Standard:</p> <ul style="list-style-type: none"> • Identity band design including display of human readable information • Identity band production, verification, fitting and use • Newborn Blood Spot (NBS) Screening Programme Card Label • The NHS required patient identifiers for identity bands. These are mandated by the NHS Improvement Standard ISB 0099: Patient Identifiers for Identity Bands • Radio Frequency Identification (RFID) • Barcoding of blood and blood products tracking • Barcoding of medical records tracking and document management • Any of the business processes that adoption of this standard will enable e.g. scanning of barcodes and system design <p>This standard applies to all healthcare settings in England where an identity band is worn by the patient. It also applies to all healthcare IT systems used by the NHS in England that develop and implement systems which result in the production of patient identity bands.</p> <p>The users of the standard will be those involved in the design, manufacture, procurement, deployment and use of systems which result in the production of patient identity bands, as well as those who are associated with the provision of care to the patient. These may include:</p> <ul style="list-style-type: none"> • IT and informatics personnel • Finance and procurement • Departmental directors and managers • Project managers • Healthcare professionals • Administration staff • Estates <p>Although out of scope, due to the relationship between the two, the standard may be used as additional supporting guidance when meeting the requirements of the UK Newborn Blood Spot (NBS) Screening Programme. However, this standard does not replace the NBS Screening Programme Card Label.</p> <p>System Developers and Implementers must comply with the following standards for Clinical Risk Management: DCB0160 and DCB0129, in its application to the manufacture and deployment of health IT systems. Further information can be found in the Implementation Guidance and Supporting Information in Section 2.</p>

4 Concept of Use

4.1 GS1 Global Service Relation Number (GSRN)

The Global Service Relation Number (GSRN) is the GS1 Identification Key that **MUST** be used when encoding the AIDC Patient Identification Data Set. For full details of the GS1 GSRN, refer to the [GS1 General Specifications](#) section 4.7.

A GSRN identifies a relationship between a service provider and a service recipient. In simple terms, a company or business will issue a GSRN to a customer to identify their relationship. This could be a club membership, a member of a loyalty scheme or to identify a patient using NHS services.

In the case of this application use of the GSRN, the service provider is NHS Digital (as the service provider of the NHS Number) – identified by the GS1 Unique Organisation Prefix for NHS Digital; The service recipient is the individual patient receiving care and wearing an identity band – identified by their NHS Number.

The GSRN is simply a key to a database which holds the information required, e.g. Patient Administration System (PAS). The GSRN can then be encoded in a barcode which is used to access the database.

4.2 GS1 Service Relation Instance Number (SRIN)

The Service Relation Instance Number (SRIN) is an optional extension to the GSRN and **MAY** be used when encoding the AIDC Patient Identification Data Set. For full details of the GS1 SRIN, refer to the [GS1 General Specifications](#) section 4.7.1.4.

If there is a need to further identify service encounters of a particular service recipient, the Service Relation Instance Number (SRIN) may be added to the GSRN. As with the GSRN, the service recipient in this application, is the individual patient receiving care.

This would, for example, allow differentiation of subject of care identification captured from an identification band, both before and after its replacement (i.e. radiology examination). If the treatment plan requires different instances of care, such as chemotherapies, and when a record should be captured for each instance, the SRIN linked to the GSRN may be used.

Since the SRIN is an attribute of a service relation, it must be processed with the GSRN of the service relation to which it relates. For further detail on Data relationships, refer to the [GS1 General Specifications](#) section 4.14.

4.3 Encoding the AIDC for Patient Identification Data set

The encoded AIDC for Patient Identification Data set results in a data string which consists of the following items (the full data set can be found at Section 7):

DATA STRING BEGINS:


Application Identifier	Application Identifier (AI) 8018 to indicate the following data string is a GS1 GSRN.
GS1 Unique Organisation Prefix	A globally unique number assigned to a GS1 member organisation; In this case the GS1 member is NHS Digital, as the service provider of the NHS Number.
Service Reference Number	The number allocated to identify the service. In this case, the individual patient's NHS Number including the check digit.
Check Digit	A modulo 10 check digit – for the GSRN.
Application Identifier	Application Identifier (AI) 8019 to indicate the following data string is a GS1 SRIN.
SRIN	A numeric field that can be up to ten digits in length to identify the episode of care.
Application Identifier	Application Identifier (AI) 91 to indicate the following data string is for Hospital Identifiers.
Organisation Identifier (Code of Provider)	The local NHS organisation identifier allocated by the NHS Organisation Data Service (ODS).
Patient Hospital Number	The local hospital / PAS number for the individual patient.
GS1 GLN for local Hospital	A global location number (GLN) used to identify the hospital at which care is being provided allocated by the GS1 member; In this case the GS1 member is local NHS Trust / organisation.
Application Identifier	Application Identifier (AI) 93 to indicate the following data string is for Patient Descriptive Data.
Last Name	The patient's last / surname.
First Name	The patient's first / forename.
Date of Birth	The patient's date of birth.
Time of Birth	The patient's time of birth (if a baby).
Application Identifier	Application Identifier (AI) 92 to indicate the following data string is for Baby Details.
Number of Babies Identifier	An identifier indicating number of babies born and their rank.
Baby of (Last Name)	The baby's mother's last / surname.
Baby of (First Name)	The baby's mother's first / forename.

DATA STRING ENDS

Format of the AIDC for Patient Identification Data String																		
AI	GSRN			AI	SRIN	AI	Hospital Identifiers			AI	Patient Descriptive Data				AI	Baby Details		
	GS1 Unique Org Prefix	NHS Number	Check Digit		Service Relation Instance Number		Organisation Identifier (Code of Provider)	Patient Hospital Number	GS1 GLN for Hospital		Last Name	First Name	Date of Birth – DD-Mmm-CCYY	Time of Birth – HH:mm		Number of Babies Indicator e.g. 1/2	Baby of (Last Name)	Baby of (First Name)
8018	n7	n10	n1	8019	n10	91	an3 to an6	an20	n13	93	an35	an35	an11	an5	92	n1/n1	an35	an35
F	F	F	F	F	V	F	V	V	F	F	V	V	F	F	F	F	V	V

5 Permitted Data Carriers

The following data carrier **MUST** be used with the AIDC for Patient Identification standard:

GS1 DataMatrix Barcode	
Example	
Recommendation	MUST
Comments	<ul style="list-style-type: none"> • This standard mandates the use of the GS1 DataMatrix barcode containing the AIDC for Patient Identification Data Set. • For legacy purposes and to ease migration, NHS organisations MAY implement dual barcoding on identity bands, i.e. a GS1 DataMatrix barcode containing the AIDC for Patient Identification Data set AND a 1D / linear barcode containing the NHS Number or local hospital / PAS number. The linear barcode MAY be a Code 39 or Code 128. It SHOULD NOT be a GS1-128 barcode as these are too wide to fit onto identity bands.
Pros	<ul style="list-style-type: none"> • Carries alpha numeric data. • Capable of encoding much larger amount of data than linear barcodes. • Fits into small spaces / onto small items, thereby improving scanning ease and accuracy and ideal for patient identity bands. • The GS1 DataMatrix barcode symbology that will be indicated for use in other AIDC standards, e.g. Sterile surgical instruments tracking, Pharmaceutical Legislation compliance
Cons	<ul style="list-style-type: none"> • It is likely that a number of existing systems in the NHS will be unable to create the GS1 DataMatrix barcode format without making system changes. • Some existing older model printers in the NHS will not be capable of printing the GS1 DataMatrix barcode.
Technical Instructions for Production, Verification and Printing	<ul style="list-style-type: none"> • GS1 DataMatrix Guideline: an introduction and technical overview

6 Requirements

6.1 Information Specification

The following requirements use **MUST** (or **MUST NOT**), **SHOULD** (or **SHOULD NOT**) and **MAY** (or **MAY NOT**) as defined by [RFC-2119](#).

#	Requirements
General	
1.	When implementing DCB1077: AIDC for Patient Identification, the Fundamental standard ISB 0108: AIDC Automatic Identification and Data Capture MUST be used as a reference guide.
2.	This standard SHOULD be implemented alongside the existing national standards, notices and guidance for patient identifiers and identity bands, including ISB 0099: Patient Identifiers for Identity Bands . These are all listed in Sections 2.1 and 2.2 of this document.
3.	When designing and manufacturing AIDC solutions / systems, for purposes of Patient Identification in the NHS, DCB0129: Application of Clinical Risk Management relating to the Manufacture of Health IT Systems SHOULD be used to identify and acceptably manage clinical safety risk associated with solution / system design.
4.	When procuring, deploying and using AIDC solutions / systems for purposes of Patient Identification in the NHS, DCB0160: Application of Clinical Risk Management relating to the Deployment and Use of Health IT Systems SHOULD be used to identify and acceptably manage clinical safety risk associated with context of use and human factors. While not in scope for this standard, it is assumed that NHS organisations will address risks and issues related to identity band production, verification, fitting and use as part of wider patient identification safety and information governance risk management for that NHS organisation. This standard MAY also be used as a framework for developing an AIDC for Patient Identification implementation project plan.
5.	NHS organisations SHOULD NOT procure AIDC technological solutions for encoding the AIDC for Patient Identification Data set unless they can demonstrate compliance with this standard.
6.	This standard <u>MUST NOT</u> be used on documentary artefacts other than the patient identity band IF the intended purpose is to identify the document itself and not the patient.
Data Carriers	
7.	The data carrier which MUST be used to carry the AIDC for Patient Identification Data set is the GS1 DataMatrix Symbol. Refer to Permitted Data Carriers in Section 5.
8.	It is recommended that, where space permits, all identity bands SHOULD carry two GS1 DataMatrix Symbols, containing exactly the same AIDC for Patient Identification Data set, one at each end of the identity band. This is for ease of scanning and as a backup, should one fail or become destroyed.
9.	GS1 DataMatrix Symbol production, verification and printing MUST be conducted according to the technical instructions and guidance in GS1 document: " GS1 DataMatrix Guideline: an introduction and technical overview ".

10.	<p>For legacy purposes and to ease migration, NHS organisations MAY implement dual barcoding on identity bands, i.e. a GS1 DataMatrix Symbol containing the AIDC for Patient Identification Data set AND a 1D / linear barcode containing the NHS Number or local hospital / PAS number. The linear barcode MAY be a Code 39** or Code 128* and MUST NOT be a GS1-128 barcode as these are too wide to fit onto identity bands. This standard assumes that identity bands are not transferred between trusts.</p> <p>*Code 128 is a non GS1 barcode - https://en.wikipedia.org/wiki/Code_128 **Code 39 is a non GS1 barcode - https://en.wikipedia.org/wiki/Code_39</p>
11.	<p>Implementation of dual barcodes MUST NOT compromise the human readable information on the identity band, nor the GS1 DataMatrix Symbol.</p>
12.	<p>This Standard Specification does not replace the NHS newborn blood spot (NBS) screening Card Label. However, it MAY be used as additional supporting guidance in meeting the NHS newborn blood spot (NBS) screening card label requirements, due to the relationship between them.</p> <p>Systems which have been designed / configured to produce both the NHS number for babies as per the Birth Notifications Service / baby identity bands AND the Newborn Screening Blood Spot Card Label SHOULD be updated so that the GS1 DataMatrix Symbol containing the AIDC for Patient Identification Data set is printed on the identity band and the GS1-128 barcode containing the NHS Number is printed on the Blood Spot Card Label.</p>
Encoding the AIDC for Patient Identification Data set	
13.	<p>The AIDC for Patient Identification Data set (refer to Section 7) MUST be used exactly as specified when encoding the data string for barcoded patient identity bands. The data set will be published and maintained by the NHS Data Model and Dictionary. Mandatory, Required, and Optional data items are indicated for adult and baby identity bands and MUST be adhered to. Examples can be seen in section 8.</p>
14.	<p>The GS1 Identification Key to be used for the encoding of patient identifiers on identity bands MUST be the Global Service Relation Number (GSRN). Refer to Section 4.3 for a high-level description and the GS1 General Specifications (Section 4.7) for full details and allocation rules.</p>
15.	<p>There are up to 5 sections in a complete encoded data string for patient identification: The GSRN (containing the NHS Number); followed by up to 4 additional data strings: Episode Information (SRIN); Hospital Identifiers; Patient Descriptive Data; and Baby Details. Each data string MUST be identified by the appropriate GS1 Application Identifier as outlined in Sections 4.3 (high-level) and 7 (full data set).</p>
16.	<p>GS1 Application Identifiers (AIs) 91 through to 99 are specifically allocated to “Company Internal Information” (Refer to Section 3.10.2. of the GS1 General Specifications).</p> <p>The NHS has allocated AIs 91, 92 and 93 for Hospital Identifiers, Baby Details and Patient Descriptive Data respectively, for the specific purpose of encoding on patient identity bands. They MUST NOT be used by the NHS to identify anything else.</p> <p>AI 94 is NOT valid for the AIDC Patient Identification Data Set.</p> <p>AIs 95 through to 97 inclusive, have been reserved by the NHS for future allocation or other use. All allocation of AIs 91 through to 97 for the NHS will be subject to formal NHS Data Model and Dictionary Change Requests and published in the NHS Data Model and Dictionary.</p> <p>AIs 98 and 99 have been put aside for local NHS organisation allocation and use. See GS1 Application Identifier (Local) in the NHS Data Model and Dictionary.</p>

17.	Additional optional data relating to the patient that is fixed, MAY be added to the end of the encoded required data set by local decision, e.g. wristband size indicator or alerts, etc. However, such optional data items are out of scope for this standard. Neither are they mandated or recommended by NHS Improvement as formal data items for the identity band. As such, any decision to encode local optional data items for use on the identity band MUST be subject to a comprehensive clinical safety risk assessment for design and use in line with DCB0160 and DCB0129. Such optional data items MUST NOT include variable data about the patient such as the hospital ward or department they are in, as this could lead to multiple identity band production for the same patient. Optional data items MUST be identified by an appropriate GS1 Application Identifier for “Company Internal Information”, i.e. either AI 98 or 99. Such optional data items MUST NOT be identified by any other GS1 Application Identifier.
18.	Barcodes SHOULD NOT be the sole mechanism for identifying the patient. Any human readable patient details printed on wristbands MUST conform to ISB 0099: Patient Identifiers for Identity Bands .
19.	The complete data string for the GS1 DataMatrix Symbol MUST NOT be printed in human readable form on the patient identity band; It is too long and would cause end user confusion.
20.	The GS1 Unique Organisation Prefix used in the GSRN number (data item 1.1) MUST be the fixed value of 5050898 to identify NHS Digital (as the service provider of the NHS Number). It MUST NOT be the NHS Trust GS1 Unique Organisation Prefix.
21.	If the NHS Number is not known, the NHS Number portion (including the NHS Number check digit) of the data string MUST be set to "999999999" and the GSRN Check Digit MUST be set to "3" – making the data set for the GSRN always "50508989999999993".
22.	The GSRN Check Digit MUST be calculated according to the instructions at Appendix 1 .
23.	The data item “Time of Birth (part of data string for Patient Descriptive Data) and the data string for Baby Details are only required for neonates (i.e. newborn babies only) and is only applicable to recordable / formal births. Refer to ISB 1555 Birth Notifications for further information relating to the collection of data for a neonate and recordable / formal births.

22.	When the NHS Number is known, the GSRN Check Digit is calculated in accordance with instructions outlined in section 11.1.
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7 AIDC for Patient Identification Data set

The following section lists the complete AIDC for Patient Identification. This data set will be published in the [NHS Data Model and Dictionary](#) (*click on Data Element / Attribute for link).

Please note, there is no data flow diagram available for this data set as this standard does not define any exchange of data.

The Mandatory, Required or Optional (M/R/O) column indicates the recommendation for the inclusion of data:

M = Mandatory: this data element is mandatory and the technical process (e.g. submission of the data set, production of output etc) cannot be completed without this data element being present.

R = Required: NHS business processes cannot be delivered without this data element.

O = Optional: the inclusion of this data element is optional as required for local purposes.

Data Item No.	Data Item	Data Element / Attribute *	Description	Data Format	Fixed or Variable	Permissible Values	M / R / O	GS1 AI	Comments
1.0	Application Identifier (AI)	GS1 APPLICATION IDENTIFIER (GLOBAL)	GS1 Application Identifier code which identifies the following data element string	n4	F	8018 = Global Service Relation Number	M	N/A	Fixed value of 8018. The GS1 Application Identifier of 8018 means the data element string is a GS1 Global Service Relation Number. A GSRN always has 18 digits (numeric only).
1.1	NHS Digital GS1 UK Unique Organisation Prefix	GS1 UNIQUE ORGANISATION PREFIX NUMBER	A globally unique number assigned to NHS Digital by GS1.	n7	F	5050898 = NHS Digital	M	8018	The fixed value of 5050898 MUST be used as it is the NHS Digital GS1 Company Prefix (GCP). The local organisation GCP MUST NOT be used. Forms the beginning of the GS1 GSRN.

Data Item No.	Data Item	Data Element / Attribute *	Description	Data Format	Fixed or Variable	Permissible Values	M / R / O	GS1 AI	Comments
1.2	NHS Number	NHS NUMBER	The NHS number is a unique identifier for a PATIENT within the NHS	n10	F	e.g. 1234567890	R	8018	The NHS Number is a fixed 10 digits (numeric only) and is REQUIRED if known. IF the NHS Number is missing, invalid or unverified, THEN set the value to 9999999999. Forms part of the GS1 GSRN. Whilst human readable form is managed by local solution for wristband design, the NHS Number SHOULD be displayed in the 3,3,4 format e.g. 123 456 7890, in accordance with ISB 0099 Patient Identifiers for Identity Bands . IF the NHS Number is not known, THEN the human readable form MUST be blank.
1.3	GSRN Check Digit	GS1 GSRN CHECK DIGIT	A Modulo 10 check digit for the GSRN string	n1	F	e.g. 1	M	8018	Ensures the GSRN is correct. Refer to Appendix 1 for check digit calculation for the 18-digit GSRN. If the NHS Number is not known, invalid or unverified, set this value to 3. The final part of the GS1 GSRN.
2.0	Application Identifier (AI)	GS1 APPLICATION IDENTIFIER (GLOBAL)	GS1 Application Identifier code which identifies the following data element string.	n4	F	8019 = Service Relation Instance Number	O	N/A	Fixed value of 8019. The GS1 Application Identifier of 8019 means the data element string is a GS1 Service Relation Instance Number. A SRIN is variable up to 10 digits (numeric only).

Data Item No.	Data Item	Data Element / Attribute *	Description	Data Format	Fixed or Variable	Permissible Values	M / R / O	GS1 AI	Comments
2.1	Service Relation Instance Number	GS1 SERVICE RELATION INSTANCE NUMBER	A unique number to identify each ACTIVITY within the Health Care Provider episode of care.	max n10	V	e.g. 1234567890	O	8019	This data element is variable, up to 10 digits (numeric only) and is OPTIONAL but MUST be used in conjunction with the GSRN if used.
3.0	Application Identifier (AI)	GS1 APPLICATION IDENTIFIER (INTERNAL)	GS1 Application Identifier code which identifies the following data element string.	n2	F	91 = Hospital Identifiers	M	N/A	Fixed value of 91. The AI of 91 identifies the code number is a GS1 Application Identifier for "Company Internal Information". The NHS has allocated the AI of 91 to "Hospital Identifiers".
3.1	Organisation Identifier	ORGANISATION IDENTIFIER (CODE OF PROVIDER)	This is the ORGANISATION IDENTIFIER of the ORGANISATION acting as a Health Care Provider	min an3 max an6	V	e.g. RAN or Q30	M	91	Data element delimited as COMMA SEPARATED. Variable between 3 and 6 alphanumeric characters. For NHS organisations, it is a code that is managed by the Organisation Data Service (ODS), NHS Prescription Services or NHS Dental Services. This data item is now MANDATORY.

Data Item No.	Data Item	Data Element / Attribute *	Description	Data Format	Fixed or Variable	Permissible Values	M / R / O	GS1 AI	Comments
3.2	Patient Hospital Number	LOCAL PATIENT IDENTIFIER (EXTENDED)	The hospital's local identifier for the patient, e.g. PAS Number. This number is used to identify a PATIENT uniquely within a Health Care Provider.	max an20	V	e.g. 567823	M	91	Data Element delimited as COMMA SEPARATED. Variable up to 20 alphanumeric characters. It may be different from the PATIENT's case note number and may be assigned automatically by the computer system. This data item is now MANDATORY.
3.3	GS1 Unique Global Location Number	GS1 GLOBAL LOCATION NUMBER	The GS1 GLN for the local hospital	n13	F	e.g. 505520568333 1	O	91	Data Element delimited as COMMA SEPARATED. Fixed 13 digits (numeric only) and is allocated by the trust from their GS1 company prefix (GCP) and is used to identify the local hospital. This data item is OPTIONAL.
4.0	Application Identifier (AI)	GS1 APPLICATION IDENTIFIER (INTERNAL)	GS1 Application Identifier code which identifies the following data element string.	n2	F	93 = Patient Descriptive Data	R	N/A	Fixed value of 93. AI of 93 identifies the code number is a GS1 Application Identifier for "Company Internal Information". The NHS has allocated the AI of 93 to "Patient Descriptive Data". Data elements 4.0 to 4.3 are REQUIRED for ALL patient wrist / identity bands if known. Data element 4.4 becomes MANDATORY for neonates and new-born baby wrist / identity bands.

Data Item No.	Data Item	Data Element / Attribute *	Description	Data Format	Fixed or Variable	Permissible Values	M / R / O	GS1 AI	Comments
4.1	Last Name	PERSON FAMILY NAME	That part of a PERSON's name which is used to describe family, clan, tribal group, or marital association.	max an35	V	e.g. SMITH	R	93	Data element delimited as COMMA SEPARATED. Variable up to 35 characters. Whilst human readable form is managed by local solution for wristband design, the Family Name MUST precede the Given Name and be displayed using capitals, in accordance with ISB 0099 Patient Identifiers for Identity Bands .
4.2	First Name	PERSON GIVEN NAME	The forename or given name of a PERSON	max an35	V	e.g. David	R	93	Data element delimited as COMMA SEPARATED. Variable up to 35 characters. Whilst human readable form is managed by local solution for wristband design, the Given Name MUST follow the Family Name and be displayed using initial capitals only, in accordance with ISB 0099 Patient Identifiers for Identity Bands .

Data Item No.	Data Item	Data Element / Attribute *	Description	Data Format	Fixed or Variable	Permissible Values	M / R / O	GS1 AI	Comments
4.3	Date of Birth	DATE OF BIRTH (PATIENT IDENTIFICATION)	The date of birth of the patient	an11 DD-Mmm-CCYY	F	e.g. 21-Nov-1993	R	93	Data element delimited as COMMA SEPARATED. Fixed 11 characters, including “-“ separator. Whilst human readable form is managed by local solution for wristband design, the date format SHOULD be displayed in the short date format DD-Mmm-CCYY e.g. 21-Nov-1993, in accordance with ISB 0099 Patient Identifiers for Identity Bands .
4.4	Time of Birth	TIME OF BIRTH (PATIENT IDENTIFICATION)	The time of birth of the neonate; only required if the patient is a newborn baby.	an5 HH:mm	F	e.g. 15:30	R	93	Data element delimited as COMMA SEPARATED. Fixed 5 characters, including “:” separator. This data element is REQUIRED in that it becomes MANDATORY for neonates. Refer to ISB 1555 Birth Notifications for further information on data required for neonates. Whilst human readable form is managed by local solution for wristband design, the time format MUST be displayed as 24-hour clock with the hours and minutes separated with a colon e.g. 15:30. It should be printed immediately to the right of the data element 4.3 'Date of Birth'.

Data Item No.	Data Item	Data Element / Attribute *	Description	Data Format	Fixed or Variable	Permissible Values	M / R / O	GS1 AI	Comments
5.0	Application Identifier (AI)	GS1 APPLICATION IDENTIFIER (INTERNAL)	GS1 Application Identifier code which identifies the following data element string.	n2	F	92 = Baby Details	R	N/A	Fixed value of 92. AI of 92 identifies the code number is a GS1 Application Identifier for "Company Internal Information". The NHS has allocated the AI of 92 to "Baby Details". Data elements 5.0 to 5.2 are REQUIRED in that they become MANDATORY for newborn babies / neonates in the absence of a valid and verified NHS Number. Data element 5.3 is OPTIONAL. IF the NHS Number is valid and verified, THEN data elements 5.1 and 5.2 are OPTIONAL but highly recommended.
5.1	Number of Babies Indicator	NUMBER OF BABIES IDENTIFICATION CODE (PATIENT IDENTIFICATION)	An identifier indicating number of babies born and their rank; applicable only to recordable/formal births.	n1/n1	F	E.g. 1/1 = one baby; 1/2 = First of two babies (twin 1); 2/2 = Second of two babies (twin 2); and so on. See Appendix 2 for the full specification of this data item.	R	92	Data element delimited by COMMA SEPARATED. Fixed numeric data format, with "/" separator. Whilst human readable form is managed by local solution for wristband design, the label "Rank" MUST be displayed to the left of the Number of Babies Indicator. This data item is REQUIRED; applicable only to recordable/formal births. Refer to ISB 1555 Birth Notifications for further information on recordable / formal births.

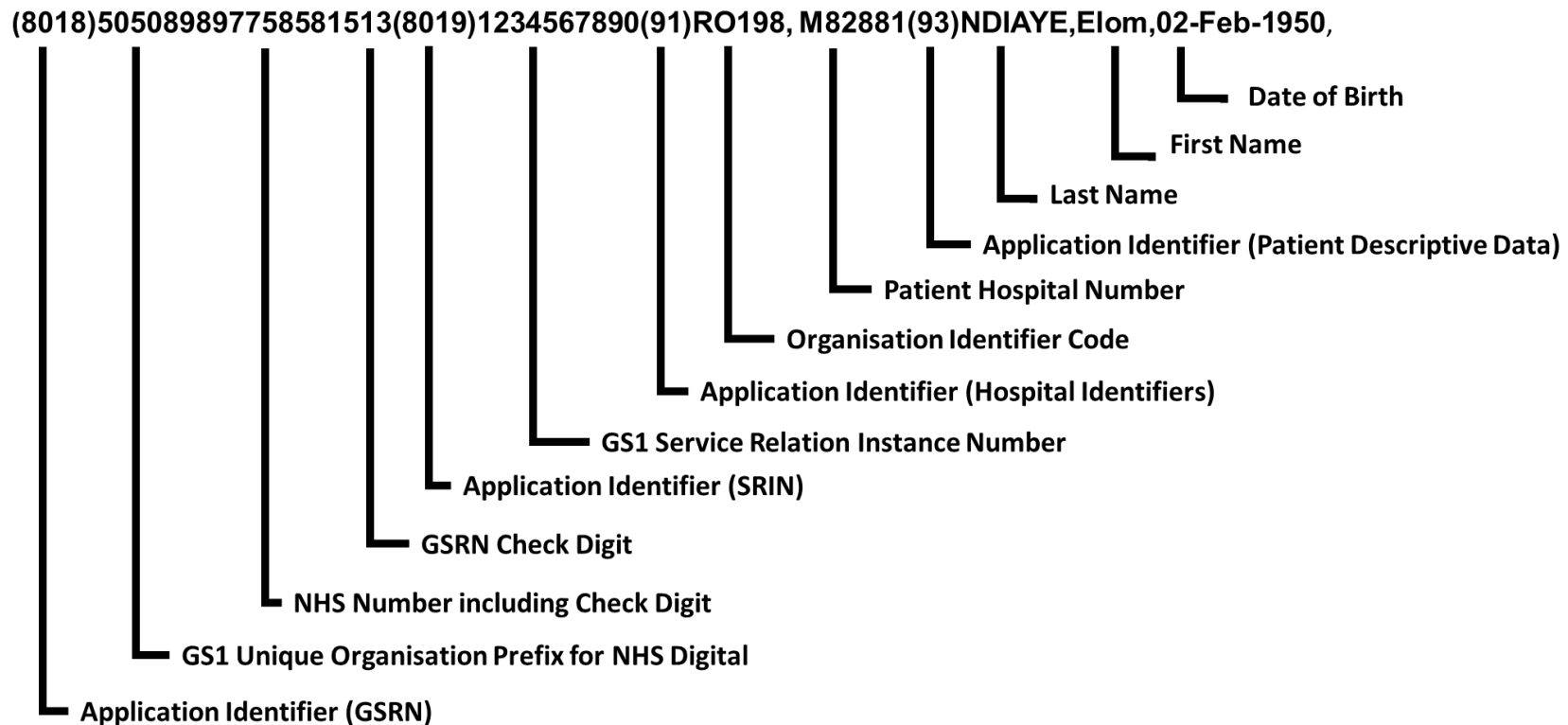
Data Item No.	Data Item	Data Element / Attribute *	Description	Data Format	Fixed or Variable	Permissible Values	M / R / O	GS1 AI	Comments
5.2	Baby of (Last Name)	PERSON FAMILY NAME (MOTHER OF BABY)	That part of a PERSON's name which is used to describe family, clan, tribal group, or marital association, where the PERSON here is the mother of the baby.	max an35	V	E.g. SMITH	R	92	Data element delimited as COMMA SEPARATED. Whilst human readable form is managed by local solution for wristband design, the label "Baby Of" MUST be displayed first, followed by the mother's FAMILY NAME (in capitals). This MAY be followed by the mother's GIVEN NAME (in initial capitals). Person names MUST be displayed as the Family Name first, followed by the Given Name. This data item is REQUIRED .
5.3	Baby of (First Name)	PERSON GIVEN NAME (MOTHER OF BABY)	The forename or given name of a PERSON where the PERSON here is the mother of the baby.	max an35	V	E.g. Sandra	O	92	Data element delimited as COMMA SEPARATED. Whilst human readable form is managed by local solution for wristband design, the label "Baby Of" MUST be displayed first, followed by the mother's FAMILY NAME (in capitals). This MAY be followed by the mother's GIVEN NAME (in initial capitals). Person names MUST be displayed as the Family Name first, followed by the Given Name. This data item is OPTIONAL .

8 Patient Identity Bands – Example Encoded Data Strings

Using the information provided in Sections 4 and 7, the encoded data string for identity bands can be represented in the following **human readable** way: *(NB: Brackets are there to aid the human readable format and **MUST** be removed for machine readable codes)*

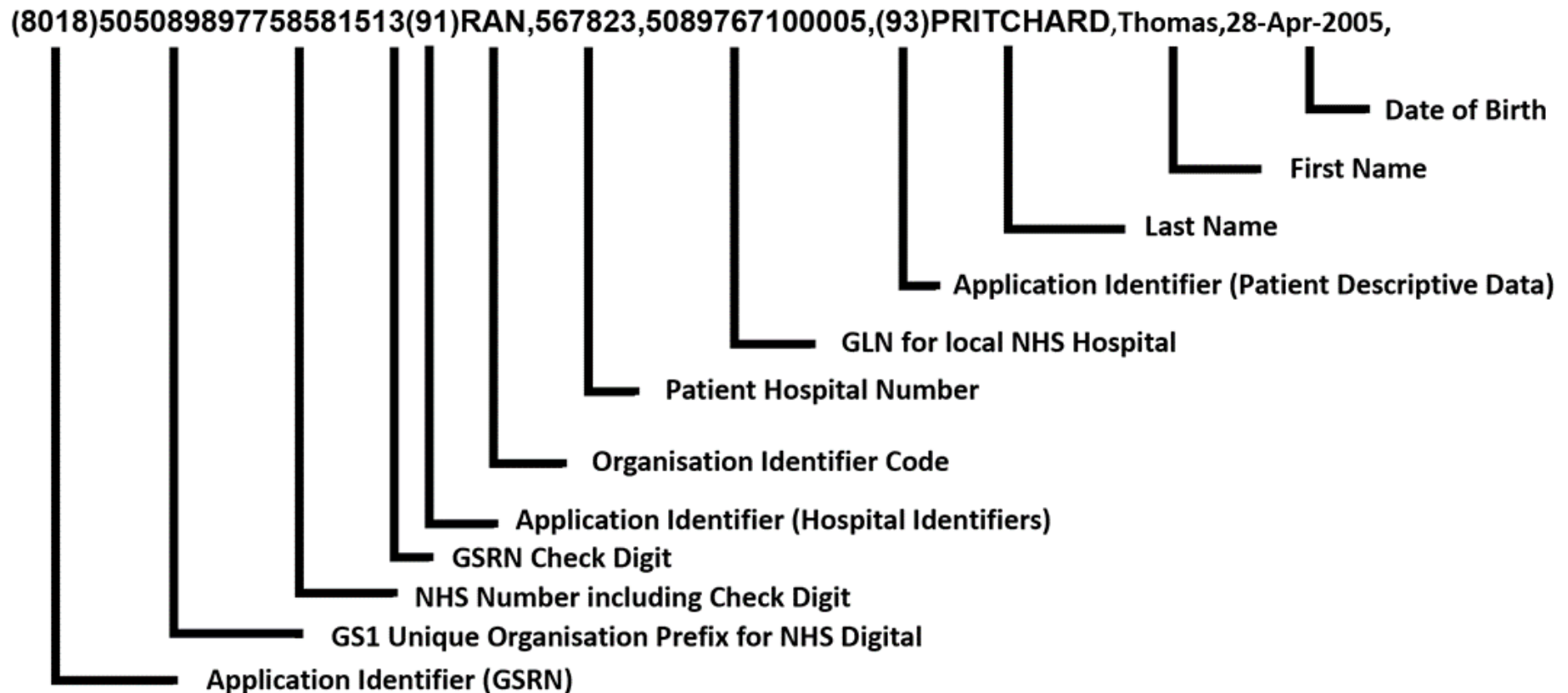
8.1 Standard Identity Band – NHS Number Valid and Verified, with SRIN

The patient is a female with a valid and verified NHS Number, with SRIN available.



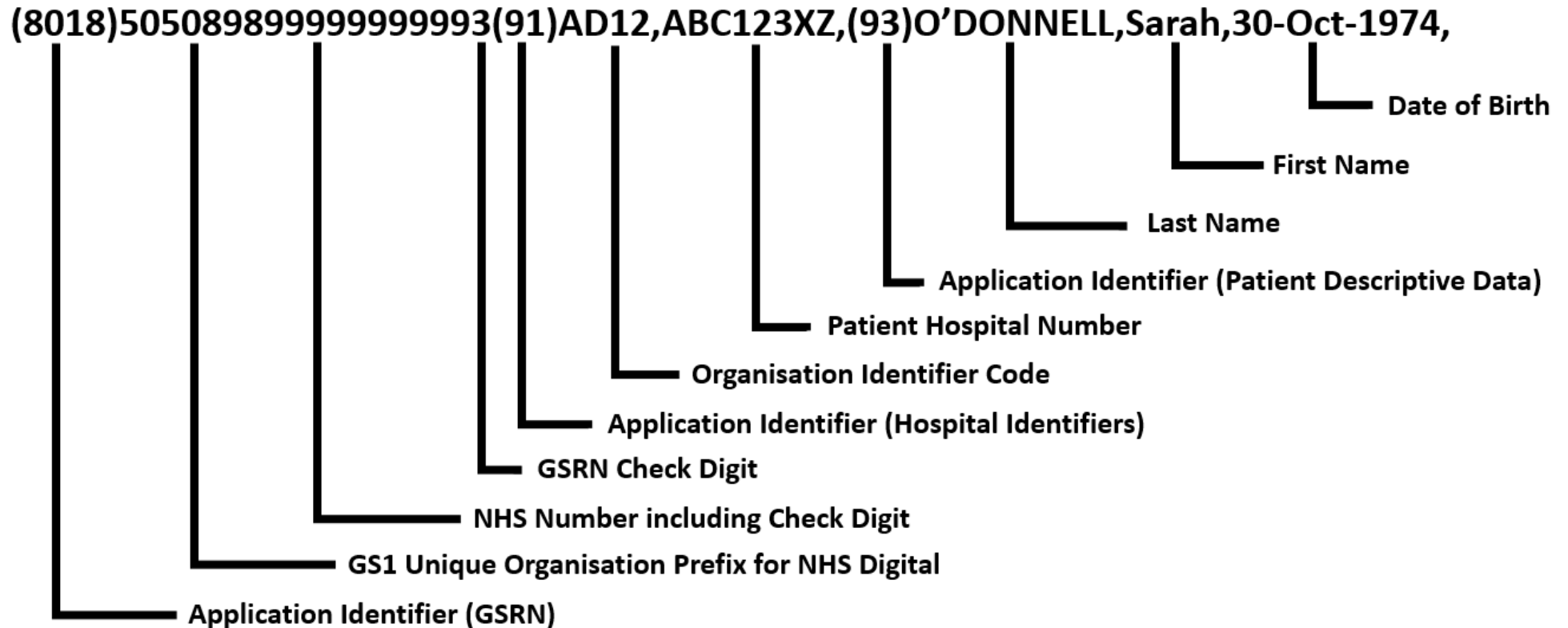
8.2 Standard Identity Band – NHS Number Valid and Verified, with GLN

The patient is an infant male with a valid NHS Number available. The hospital wishes to include their GS1 Global Location Number (GLN), which is optional.



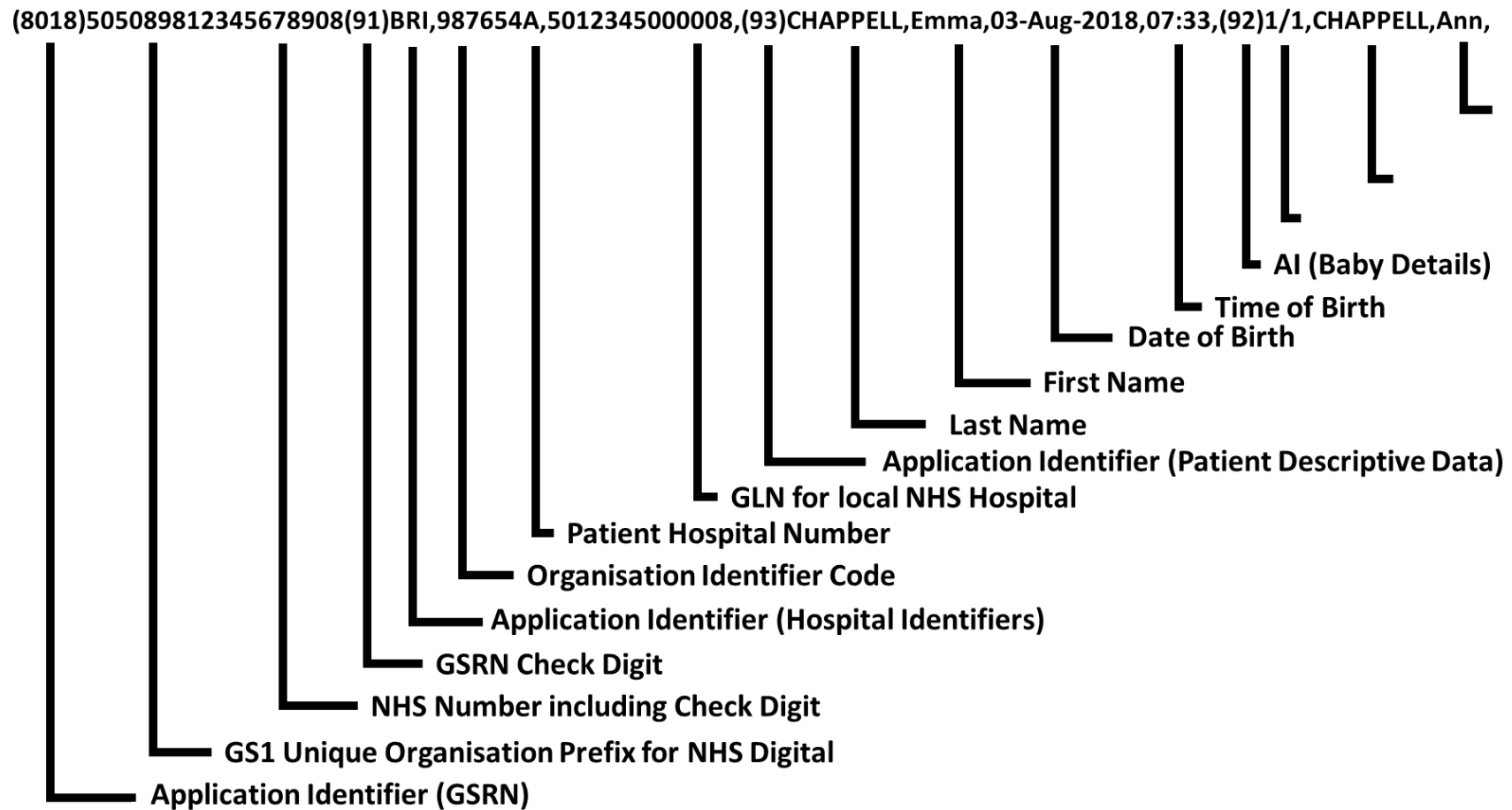
8.3 Standard Identity Band – NHS Number Not Available / Invalid / Unverified

The patient is an adult female and their NHS Number is not available (or invalid or unverified). The hospital has not registered with GS1 yet to obtain their own GS1 Unique Organisation Prefix and create their Global Location Number (GLN).



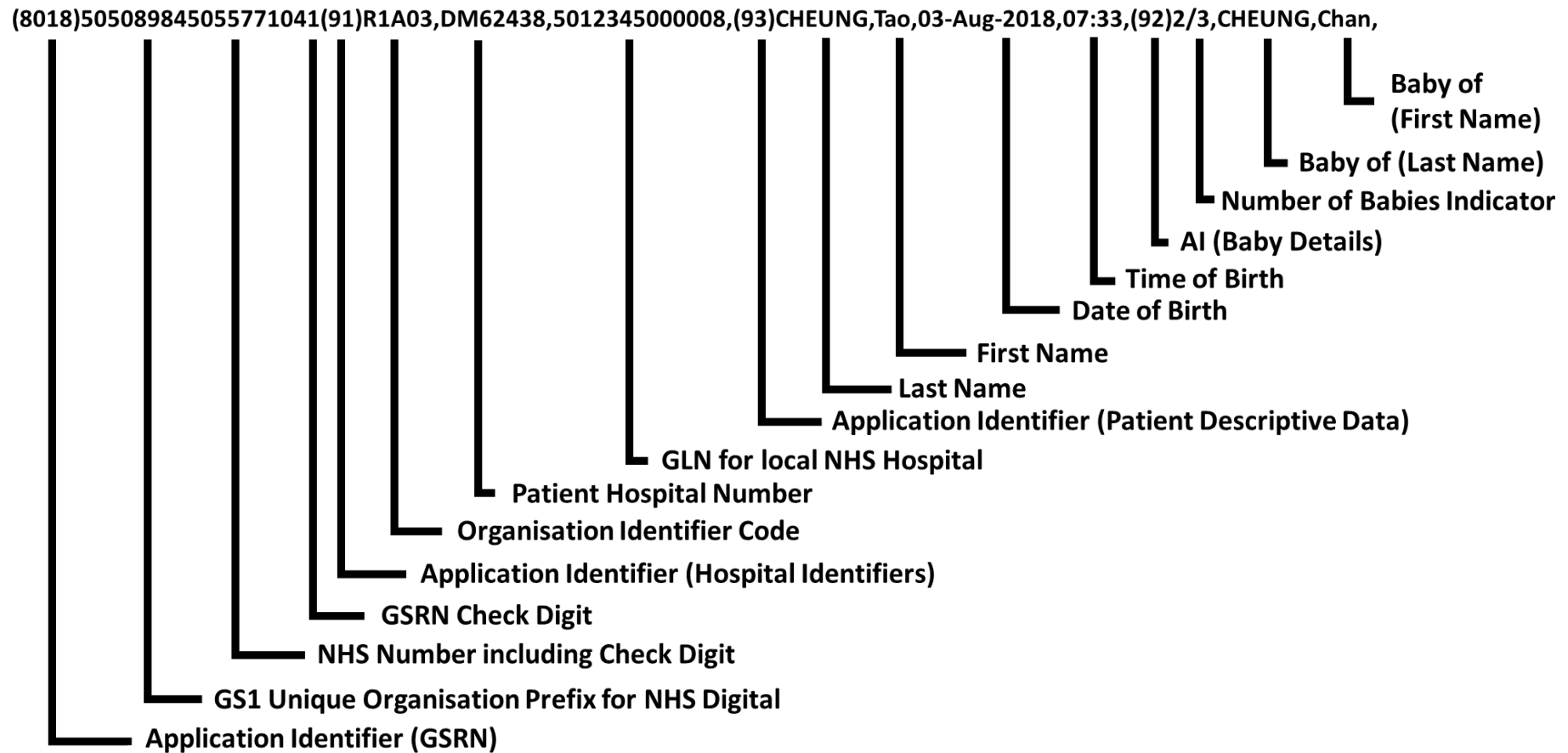
8.4 Baby Identity Band – Single Baby

The patient is a one-day old female single baby and has been registered with the Birth Notification Service and therefore has a valid and verified NHS Number. The hospital wishes to include their GS1 Global Location Number (GLN) to identify the location.



8.5 Baby Identity Band – More Than One Baby

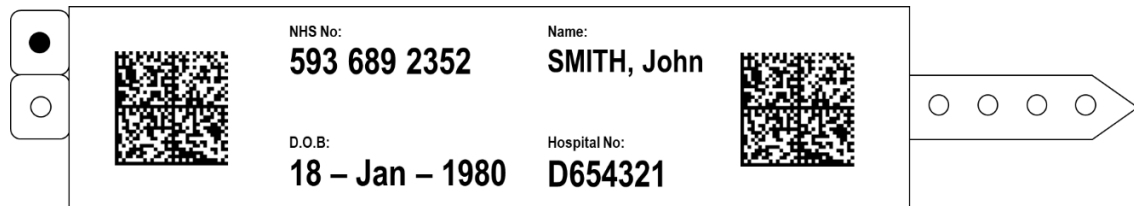
The patient is the one-day old second baby of male triplets and has been registered with the Birth Notification Service and therefore has a valid and verified NHS Number. The hospital wishes to include their GS1 Global Location Number (GLN) to identify the location.



9 The Resulting Barcoded Identity Band

Examples of compliant identity bands are shown as Figures 1, 2 and 3 below *. All examples are dual barcoded with the GS1 DataMatrix and show the decoded data strings below each figure. Please note that GS1 Application Identifiers are shown here within brackets for explanatory purposes only. Brackets **MUST** be removed when encoding the data set.

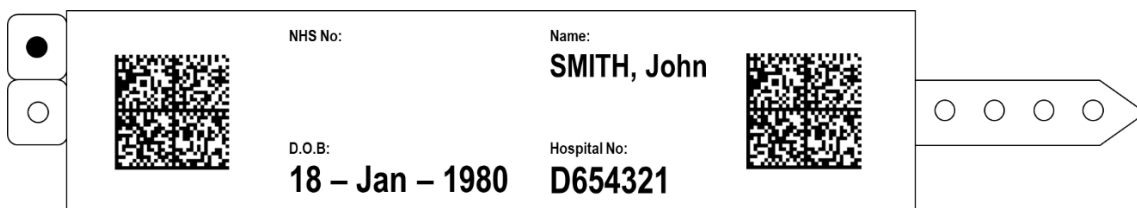
Figure 1: shows all mandatory data strings and optional data items SRIN and GLN, for an adult patient with a valid and verified NHS number



Decoded data:

(8018)505089859368923523(8019)2660151872(91)RJC,D654321,5055230300005,(93)SMITH,John,18-Jan-1980,

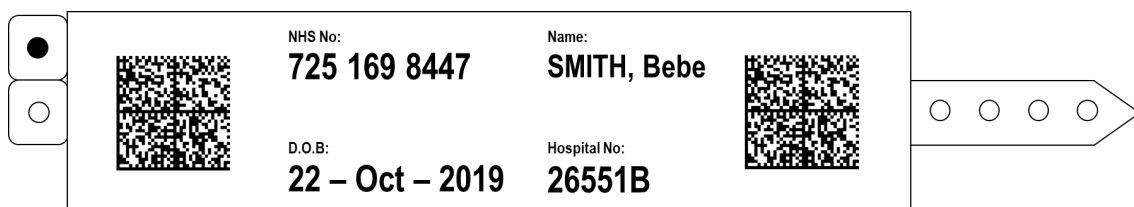
Figure 2: shows only mandatory data strings (without optional SRIN and GLN) for an adult patient with an invalid or unverified NHS number



Decoded data:

(8018)5050898999999999993(91)RJC,D654321,(93)SMITH,John,18-Jan-1980,

Figure 3: shows all mandatory data strings and optional data items for a single new-born baby with valid and verified NHS number



Decoded data:

(8018)505089872516984474(8019)80199284(91)D7D0E,26551B,5055235900002,(93)SMITH,Bebe,22-Oct-2019,14:10,(92)1/1,SMITH,Jane,

* Please note example wristbands are for illustrative purposes only and are not to scale.

10 Helpdesk

10.1 Contact Information

For further information and support on DCB1077: AIDC for Patient Identification standard, please note the following details:

Developer	
Organisation	GS1 UK
Email Address	healthcare@gs1uk.org
Phone number	Freephone 0808 178 8799 or 020 7092 3501 (available Mon-Fri 9am-5pm)

10.2 Useful resources

GS1 UK – www.gs1uk.org

Visit the GS1 UK webpage to request a free wristband compliance check and access further information and support on all GS1 Standards. Head to [GS1 UK's Healthcare Portal](#) to see how GS1's global standards for unique identification and AIDC technologies are used within the Healthcare sector to improve patient safety and drive clinical and operational efficiencies.

NHS Data Model and Dictionary – www.datadictionary.nhs.uk

The NHS Data Model and Dictionary provides a reference point for approved Information Standards Notices to support health care activities within the NHS in England. All data items outlined in this document are linked to their equivalent data element pages in the NHS Data Model and Dictionary.

NHS Digital: Standards and Collections – www.digital.nhs.uk/isce/publication/standards

Access an alphabetical list of all published Data Coordination Board (DCB) standards and collections. The list is updated on a monthly basis, following the approval of new items, and changes, by the Data Coordination Board.

11 Appendices

11.1 Appendix 1 – GSRN Check Digit Calculation

The table below shows the workings of the GSRN check digit calculation. Alternatively, an online check digit calculator is available on the [GS1 UK webpage](#).

Example of a GSRN Check Digit Calculation for the 18-Digit Field																		
Positions	N	N	N	N	N	N	N	N	N	N ₁	N ₁	N ₁	N ₁	N ₁	N ₁	N ₁	N ₁	N ₁₈
	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	
Number without Check Digit	5	0	5	0	8	9	8	9	9	9	0	0	0	5	4	5	1	
Step 1: multiply by	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
	3	1	3	1	3	1	3	1	3	1	3	1	3	1	3	1	3	
Step 2: Add up results to sum	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	
	15	0	15	0	24	9	24	9	27	9	0	0	0	5	12	5	3	= 157
Step 3: Subtract sum from nearest equal or higher multiple of ten (160) = Check Digit (3)																		
Number with Check Digit	5	0	5	0	8	9	8	9	9	9	0	0	0	5	4	5	1	3

11.2 Appendix 2 – Number of Babies Indicator

Below is the full specification for the data item 3.2 in the AIDC for Patient Identification Data set – “NUMBER OF BABIES IDENTIFICATION CODE (PATIENT IDENTIFICATION)”:

- 1/1 - One baby
- 1/2 - First of two babies (twin 1)
- 2/2 - Second of two babies (twin 2)
- 1/3 - First of three babies (triplet 1)
- 2/3 - Second of three babies (triplet 2)
- 3/3 - Third of three babies (triplet 3)
- 1/4 - First of four babies (quadruplet 1)
- 2/4 - Second of four babies (quadruplet 2)
- 3/4 - Third of four babies (quadruplet 3)
- 4/4 - Fourth of four babies (quadruplet 4)
- 1/5 - First of five babies (quintuplet 1)
- 2/5 - Second of five babies (quintuplet 2)
- 3/5 - Third of five babies (quintuplet 3)
- 4/5 - Fourth of five babies (quintuplet 4)
- 5/5 - Fifth of five babies (quintuplet 5)
- 1/6 - First of six babies (sextuplet 1)
- 2/6 - Second of six babies (sextuplet 2)
- 3/6 - Third of six babies (sextuplet 3)
- 4/6 - Fourth of six babies (sextuplet 4)
- 5/6 - Fifth of six babies (sextuplet 5)
- 6/6 - Sixth of six babies (sextuplet 6)
- 1/7 - First of seven babies (septuplet 1)
- 2/7 - Second of seven babies (septuplet 2)
- 3/7 - Third of seven babies (septuplet 3)
- 4/7 - Fourth of seven babies (septuplet 4)
- 5/7 - Fifth of seven babies (septuplet 5)
- 6/7 - Sixth of seven babies (septuplet 6)
- 7/7 - Seventh of seven babies (septuplet 7)
- 1/8 - First of eight babies (octuplet 1)
- 2/8 - Second of eight babies (octuplet 2)
- 3/8 - Third of eight babies (octuplet 3)
- 4/8 - Fourth of eight babies (octuplet 4)
- 5/8 - Fifth of eight babies (octuplet 5)
- 6/8 - Sixth of eight babies (octuplet 6)
- 7/8 - Seventh of eight babies (octuplet 7)
- 8/8 - Eighth of eight babies (octuplet 8)
- 1/9 - First of nine babies (nontuplet 1)
- 2/9 - Second of nine babies (nontuplet 2)
- 3/9 - Third of nine babies (nontuplet 3)
- 4/9 - Fourth of nine babies (nontuplet 4)
- 5/9 - Fifth of nine babies (nontuplet 5)
- 6/9 - Sixth of nine babies (nontuplet 6)
- 7/9 - Seventh of nine babies (nontuplet 7)
- 8/9 - Eighth of nine babies (nontuplet 8)
- 9/9 - Ninth of nine babies (nontuplet 9)