DCB1077 Automatic Identification Data Capture (AIDC) for Patient Identification

Implementation Guidance

March 2020

Information and technology
for better health and care

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.

The controlled versions of these documents can be found on the NHS Digital website. Any copies held outside of that area, in whatever format (e.g. paper, email attachment), are considered to have passed out of control and should be checked for currency and validity.

Date of publication: 26 March 2020

Contents

1 Supporting Information 4

1.1 Related Standards 4
1.2 Supporting Guidance 4

2 Overview 5

3 Timescales / Plan 7

4 Helpdesk 7

4.1 Contact Information 7
4.2 Useful resources 7

5 Implementation Guidance by User Group 8

5.1 All users 8
5.2 Existing users 8
5.3 New users 8

6 GS1 DataMatrix Technical Guidance 9

6.1 Encoding Data 9
6.2 Reading and Decoding 9
6.3 Printing 10
6.4 Barcode Verification 10

1 Supporting Information

1.1 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.

1.2 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.

2 Overview

STANDARD	
Standard Number	**DCB1077**
Title	Automatic Identification and Data Capture (AIDC) for Patient Identification
Release	Amd 67/2018
Type	Implementation Guidance

Definition	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 AIDC for Patient Identification Data Set.
	
	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:
	
	• New data items introduced:
	  ○ 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
	
	Please review the related Change Specification for full details of changes.

Scope	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. The following are out of scope for this Operational Standard: • 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

STANDARD	
	• 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 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. 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: • IT and informatics personnel • Finance and procurement • Departmental directors and managers • Project managers • Healthcare professionals • Administration staff • Estates 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. Reference to the Requirements Specification clinical risk management standards – to be completed prior to go live with any outstanding risks satisfactorily mitigated. The primary purpose of the proposed standard is for secondary uses only and will therefore have no direct impact on Clinical Safety and as such is not in scope of DCB0129. Consequently, a Clinical Safety Case Report is not required to support DCB1077 Amd 67-2018 - AIDC for Patient Identification. However, implementation of DCB1077 Amd 67-2018 - AIDC for Patient Identification may require modification to the health IT system from which the collection/extraction is made. The safety implications of any such modifications must be considered by the manufacturer and all other parties involved under DCB0129 and the health organisation under DCB0160.

3 Timescales / Plan

The Department of Health and Social Care (DHSC) published its eProcurement strategy in 2014 and sets out a range of measures to enable transparency and efficiency in NHS procurement to help support patient safety. The strategy mandates the use of GS1 standards by NHS Acute Trusts, to identify every person, every product and every place, with the compliance deadline set for 2020/21.

4 Helpdesk

4.1 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)

4.2 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.

5 Implementation Guidance by User Group

5.1 All users

The DCB1077: AIDC for Patient Identification standard must be reviewed alongside ISB 0108: AIDC: Automatic Identification and Data Capture.

Health IT systems, from which the collection or extraction is made, may need to be modified to ensure the AIDC for Patient Identification Data Set is encoded as specified in DCB1077.

Whilst system design and business processes around collections and extractions remain out of scope for DCB1077, the safety implications of any such modifications must be considered by manufacturers of health IT systems as well as those involved in the deployment and use of health IT systems. This is outlined in the following related standards:

- 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

Any trust wishing to check the GS1 compliance of their patient wristbands can do so for free, by getting in touch with GS1 UK.

5.2 Existing users

For hospitals/healthcare providers that are already using ISB 1077 compliant wristbands with a GS1 DataMatrix barcode, the related Change Specification should be reviewed to ensure all changes are understood and can be implemented as specified.

Any trust wishing to check the GS1 compliance of their patient wristbands can do so for free, by getting in touch with GS1 UK.

5.3 New users

New users wishing to implement DCB1077 must ensure the information standard is reviewed alongside the ISB 0108: AIDC: Automatic Identification and Data Capture standard.

Additionally, new users must review the “GS1 DataMatrix Guideline: Overview and technical introduction to the use of GS1 DataMatrix” to ensure all systems and equipment used to create the barcode is compliant with GS1 Standards. See section 6 of the Implementation Guidance for further information on technical requirements.

New users of DCB1077 are not required to review the Change Specification as this outlines the changes between the previous and current data set.

Any trust wishing to check the GS1 compliance of their patient wristbands can do so for free, by getting in touch with GS1 UK.

6 GS1 DataMatrix Technical Guidance

Systems and equipment which encode, print and scan the GS1 DataMatrix barcode for patient identity bands, must be configured in accordance with the guidance set out in "GS1 DataMatrix Guideline: Overview and technical introduction to the use of GS1 DataMatrix".

6.1 Encoding Data

The encoding structure mandated by GS1 standards, is to encode data using the subset of ISO/IEC 646 (equivalent to ASCII table 256) for all the information. This limited character set is supported by almost all computer systems available around the world today.

Although it is possible to encode any type of data in Data Matrix symbols, the data must be structured according to the rules of the GS1 System when using GS1 DataMatrix.

See section 2 of the GS1 DataMatrix Guideline, for further information on encoding structures.

6.2 Reading and Decoding

Once the symbol is printed, a reading or scanning device is required to capture the encoded data. The word 'scanning' is normally used to cover two separate process steps:

1. The actual scan (the reading of the dark and light areas)
2. The decode (the processing of the captured image to determine the encoded data)

Once decoded, the data will be passed to an information system for further processing.

GS1 DataMatrix symbols require scanners that can read in 2-dimensions. Typically, this requires camera or imaging technology. This is a different technology from the one used by many of the laser scanners for reading linear barcodes.

The scanner can be programmed to recognise a GS1 DataMatrix symbol, thanks to its decoding system and the unique patterns (the Data Matrix finder patterns and the leading FNC1). This is a key security feature allowing the scanner to distinguish between data encoded according to the GS1 Application Identifiers rules and any other data. This offers system protection and allows GS1 Application Identifiers to be correctly interpreted.

The scanner does not normally contain any intelligence but simply transfers the string of characters read from the symbol to the Information System for further processing.

See section 3 of the GS1 DataMatrix Guideline, for further information on reading and decoding.

6.3 Printing

Software of some type will be required to generate GS1 DataMatrix symbols so that the data may be formatted into the required syntax by the printing device.

The exact choice of software will need to meet the individual business requirements.
In general terms the software must be capable of generating a GS1 DataMatrix symbol in full conformance to the ISO/IEC 16022 standard. Often a difficult area is the programming of FNC1 in the first position as each software supplier has (or has not) developed its own method to obtain the correct encoding in the form of codeword 232. It is worth ensuring the software has this feature.

Symbol quality is of great importance and should be included in any production quality control process. As a quick check, the following should be confirmed with any technology supplier:

- Full compliance to the ISO/IEC 16022 standard
- The software is able to support GS1 Application Identifiers
- Data Matrix ECC 200 (not older, obsolete versions of Data Matrix) is supported
- The FNC1 is supported both as a start and separator character

ISO/IEC 15415 and the GS1 General Specifications define the methodology to test the print quality of printed GS1 DataMatrix symbols.

See section 4 of the GS1 DataMatrix Guideline, for further information on printing, print quality.

6.4 Barcode Verification

The primary function of any barcode is carrying data from the point at which it is originated to the point at which the data MUST be captured. Verification aims to check that the symbol can fulfil this function by ensuring compliance with the appropriate standard ISO/IEC15426-2.

To be reliable, the verification process must be:

- Fully compliant and in accordance with standard ISO/IEC15426-2,
- Performed by a qualified operator.
- Cover both the print quality aspects (explained below) and the data content requirements explained by application guidelines (see section 6.1)

Verification provides diagnostic information about any problem with a symbol and provides a high level of confidence that the symbol will scan in an open environment within its intended area of application. However, it should be noted that some symbols that fail verification will still be readable by some barcode readers.

Note: It is important not to confuse scanning with verification. At best, scanning a symbol can be used as a “go/no-go” test of whether a symbol can be read by that particular scanner.

See section 4 of the GS1 DataMatrix Guideline, for further information on barcode verification.