A Technical Bulletin

in support of

ISBT 128

Bulletin Number 8

Specification for *ISBT-128* Data Structures to support the secure bedside matching of patient and transfusion/transplant product identification

January 2006

Editorial Board

Suzanne Butch, MA, MT(ASCP)SBB
Ann Arbor, MI, USA

Pat Distler, MS, MT(ASCP)SBB
Redlands, California

Jørgen Georgsen, MD
Odense, Denmark

Mario Muon, MD
Coimbra, Portugal

Editor

Paul Ashford, MSc. CEng. CSci.
Executive Director
ICCBBA, Inc

Published by:
ICCBBA, Inc
204 St Charles Way, Unit 179E, York, PA 17402, USA
www.isbt128.org

Warranty

ICCBBA, Inc provides no warranty that the use of *ISBT 128* is suitable for any particular purpose and the selection, use, efficiency and suitability of *ISBT 128* is the sole responsibility of the Licensed User.

Liability

ICCBBA, Inc's liability is limited to that specified in the ICCBBA, Inc. License Agreement which is available on the ICCBBA web site. Under no circumstances shall ICCBBA, Inc's liability exceed the current annual license fee, and ICCBBA, Inc will in no circumstances be liable for any damages whatsoever, including without limitation damages for loss of data, business or goodwill or any other consequential losses of any nature arising from the use of *ISBT 128*.

© 2006 ICCBBA, Inc. *All Rights Reserved*

Table of Contents

© 2006 ICCBBA, Inc. *All Rights Reserved*

Acknowledgement

This specification is based upon a proposal prepared and submitted to ICCBBA, Inc by Richard Kriozere and Larry Cullen (Digi-Trax Corporation), and Suzanne Butch (ATAG Chair).

1 Introduction

An essential step in the transfusion process is the confirmation at the bedside that the patient is receiving the correct blood product. Automation at this point offers improved safety. Secure verification requires that the same information, read from different locations, be compared. It is therefore necessary to ensure that automated systems can read not only the information itself, but also an indicator showing the location of the information.

This specification defines new data structures that carry both the transfusion information and its location. These data structures will allow new systems to be developed using standardized coding that will enhance patient safety.

It is fully understood that at this time there is no software written to take advantage of these new data structures. With this standard in place it is believed that software vendors will take advantage of the increased security possible through the use of these codes and integrate them to promote superior patient safety in their software products.

In addition to specifying *ISBT 128* data structures, an implementation mechanism is proposed. This mechanism is not part of the *ISBT 128* standard, but is presented in the hope that a consistent implementation approach can be achieved.

© 2006 ICCBBA, Inc. *All Rights Reserved*

2 Data Structures

2.1 Patient Date of Birth (Data Structure 024)

Purpose: To indicate the date of birth of the patient, and the location of this occurrence of the information.

Structure: =#aayyyymmdd.

Element	Length	Type
=	1	data identifier, first character
#	1	data identifier, second character
aa	2	numeric {0–9}
yyyy	4	numeric {0–9}
mm	2	numeric {0–9}
dd	2	numeric {0–9}

The 10 character data content string, **aayyyymmdd**, is encoded and interpreted as follows:

aa is a location code identifying where this occurrence of the information is held. For acceptable values see Table 1, page 5;

yyyy is the year of birth;

mm is the month of birth;

dd is the day of birth;

© 2006 ICCBBA, Inc. *All Rights Reserved*

2.2 Patient Identification Number (Data Structure 025)

Purpose: To indicate the patient identification number, and the location of this occurrence of the information.

Structure: &#aallxx…xx **Note**: this is a variable length structure – see text below.

Element	Length	Type
&	1	data identifier, first character
#	1	data identifier, second character
aa	2	numeric {0–9}
ll	2	numeric {0–9}
xx…xx	var	alpha/numeric {A-Z, a-z, 0–9}

The variable length data content string, **aallxx…xx**, is encoded and interpreted as follows:

aa is a location code identifying where this occurrence of the information is held. For acceptable values see Table 1;

ll is the length of the following patient number field;

xx…xx is the patient number, alpha numeric only, punctuation characters and spaces are not permitted;

Table 1 Location Code Values

00	Not used
01	Wrist band
02	Order form
03	Sample Tube
04	Working/Lab list/form
05	Test report
06	Delivery note
07	Intended recipient label (attached to container)
08-79	Reserved
80-99	For local or national use

© 2006 ICCBBA, Inc. *All Rights Reserved*

2.3 Assignment of new flag character for Donation Identification Number [Data Structure 001]

The *ISBT 128* Technical Specification specifies the values assigned to the flag characters used in data structure 001. Value 11 is unassigned in this table, but will now be assigned for Donation Identification Number Data Structures used on the 'match with unit' or equivalent label.

2.4 Compound Message for use on Patient Wrist Band

Other options for patient wristbands include the use of radio frequency identification (RFID) tags or reduced space symbology (RSS) bar codes to hold the electronic information instead of bar codes. This can be done using a Compound Message (see *ISBT 128* Technical Note 3). A structured compound message has been defined to support this with a reference number of 006 (see below).

Identifier	No. of Data Structures	Content
006	02	Patient Date of Birth [Data structure 024]; Patient Identification Number [Data Structure 025]

The compound message would therefore have the structure:

=+02006=#aayyyymmdd&#aallxx…xx

© 2006 ICCBBA, Inc. *All Rights Reserved*

3 Proposed Implementation of Data Structures

3.1 Introduction

This section provides a model around which a standardized approach to use of these data structures can be built. Alternative approaches using different technologies, but maintaining the same consistency of use of *ISBT 128* data structures, may also be used so long as they provide an equivalent, or higher, degree of security.

It is proposed that two labels be encoded with bar codes. The first is the patient transfusion label or wrist band. The second label/tag would be in two parts, the top portion would be the “match with unit” part and the bottom portion would be the “intended recipient” label/tag, which would be applied to the container.

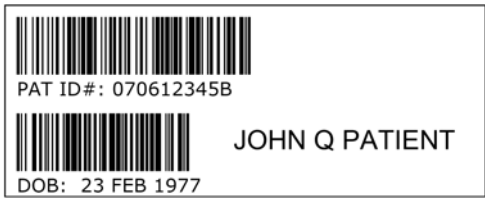
By using these *ISBT 128* structures on the transfusion wrist band and the combination “match with unit” and “intended recipient” label/tag, the patient and blood unit can be positively linked before a transfusion is started. Further when the unit is pulled from storage the new data structures can link the unit pulled to the intended unit information before the intended recipient label/tag is applied to the container.

It is intended that all of the bar codes be printed with a nominal X dimension of 0.0066” (0.17 mm). (See the *ISBT 128* Technical Specification for information on the X dimension.)

© 2006 ICCBBA, Inc. *All Rights Reserved*

3.2 Transfusion Wrist Band

The illustration below shows the design of the transfusion band (label) using bar codes with a nominal X dimension of 0.0066” (0.17 mm). It should be noted that some hospitals may opt to incorporate this bar code design into their standard patient ID wristband rather then add a second transfusion wristband. The design shows a minimal information set, which may be supplemented with additional information.



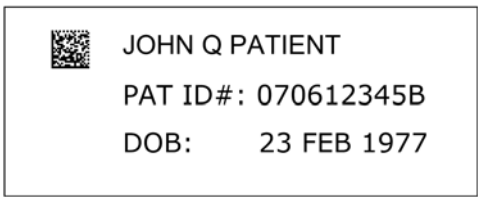
Note: This layout has not been proven in practice, and an alternative arrangement (for example with the bar codes rotated by 90º) may be more practical.

The label or portion of the wrist band illustrated here occupies a space approximately 2.5” wide by 1.0” high.

The following information and bar codes would appear on the Patient Transfusion Wrist Band.

- Patient Name would appear only as text.
- Patient Date of Birth [Data structure 024] (Optional based on a national decision). The text will be printed in DD MMM YYYY format.
- Patient Identification Number [Data Structure 025]. The text will be the hospital number in the format used within the hospital; however no spaces or punctuation characters will be used.

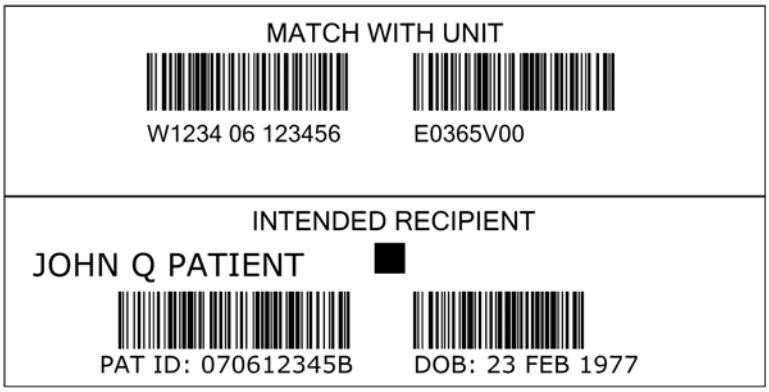
The same principle would apply to an RFID or 2-D barcode wrist band, with the electronic information for patient ID and date of birth being stored as an *ISBT 128* compound message (see 2.4 above).



© 2006 ICCBBA, Inc. *All Rights Reserved*

3.3 Match With Unit / Intended Recipient Label

The illustration below shows a possible intended recipient label design using bar codes with a nominal X dimension of 0.0066” (0.17 mm).



The following information and bar codes would appear on the **Match with Unit label**.

Blood Unit Identification Number [Data Structure 001] with flag character 11 assigned to indicate that it is located on the match with unit / intended recipient label set.

Blood Unit Product Code [Data Structure 003]. It is recommended that this be concatenated with the Donation Identification Number to ensure it is read from the proper location. Therefore the separation of these bar codes needs be 9mm ± 4mm to meet the concatenation requirements of *ISBT 128*.

The following information and bar codes would appear on the **Intended Recipient Label**.

- Patient Date of Birth [Data structure 024] (Optional based on a national decision). The text will be printed in DD MMM YYYY format.

- Patient Identification Number [Data Structure 025]. The text will be the hospital number in the format used within the hospital.

The two bar codes on the “MATCH WITH UNIT” portion of the label are matched to the unit before the label is applied. The horizontal perforation allows the top half to be separated from the bottom half of the label. The bottom half is applied to the bag and its bar codes will be matched to those on the patient wrist band before the transfusion is started. The total size of the labels shown above is 4” wide x 2” high.

© 2006 ICCBBA, Inc. *All Rights Reserved*

3.4 Operational Procedures

This section explains the intended use for the bar coded Transfusion Wrist Band, Match With Unit, and Intended Recipient Label.

Transfusion Wrist Band
At some point the hospital will issue a transfusion wrist band or admissions ID band to each patient likely to require a blood transfusion. The wrist band will include the patient name (text only), date of birth, and patient identification number. (See Section 3.2 for example wrist band design).

Match With Unit / Intended Recipient Label / Tag
When blood products are removed from inventory to be assigned to a specific patient the label as shown in Section 3.3 is printed. This label/tag is split with a perforation and the back is split vertically to facilitate backing removal horizontally. The "Match With Unit" (top portion of the label) is used to determine that the appropriate container is being labeled. The top label should match the Unit ID and Product Code on the container. Once matched with the bottom portion of the label/tag that is shown with an optional punch for tie-tag attachment, the Intended recipient label/tag can then be applied or attached to the container.

Transfusion Compatibility Match
Existing verification procedures should be followed. In addition, before the transfusion is started the bar codes of the intended recipient label/tag and the bar codes of the transfusion wrist band are scanned. With matches successfully made on all of the codes, the procedure may go forward.

© 2006 ICCBBA, Inc. *All Rights Reserved*