

Healthcare Day 2011: Modern E-Health Solutions for Enhanced Quality, Patient Safety and Efficiency

H. Oehlmann

Addressing problems, finding solutions, having the courage to embrace error-free systems

How efficiency can be increased while at the same time avoiding mistakes were the topics in the spotlight of this year's Healthcare Day. Doctors, nurses, IT specialists, experts responsible for standards and regulations and, in particular, senior managers came to Frankfurt to exchange ideas. The focus was on the human being, who as user is to face a lighter burden and as patient, on the other hand, can and should be accorded greater safety. The words of welcome spoken by Matthias Grässle, general manager of the Chamber of Industry and Commerce, Frankfurt am Main, stressed the pivotal role played by the Healthcare Day in assuring the dual demands of greater safety and efficiency in the healthcare sector.

Applications that originally had represented utopian scenarios were now presented to the some 90 delegates as well-tryed and tested systems. In attendance were also experts from the USA who reported on experiences in that country.

In a workshop Dr. Matthew King, president of VistAdoc-LLC, demonstrated new possibilities for using information technology in hospitals based on the «World Vista» system. How ingenious IT systems could meet the pertinent demands only

thanks to Automatic Identification (AutoID) was impressively demonstrated by several speakers, because human beings make mistakes while, conversely, barcode and RFID (radiofrequency identification) are quick and reliable.

Open barcode & RFID: open AutoID standards

Dr. Harald Oehlmann presented the barcode and RFID standards valid worldwide and invited the audience to use them. He outlined the trend towards DATA MATRIX codes to correct mistakes with applications ranging from the smallest identification marks on surgical instruments to dispatch labels and delivery notes. This holds out immense prospects for potential optimisation.

The Health Industry Bar Code (Healthcare Barcode System) (HIBC) plays a leading role. This system has been devised to meet the needs of the healthcare system and, as a «straight system», dispenses with the need for recoding thanks to the fact that it uses the original reference of a medical device. Today HIBC has been integrated into ISO standards to provide for unambiguous product identification.

This talk, with a strong technical focus, explained how internal numerical ranges

embedded in an ISO framework worked without any risk of confusion in all other numerical ranges and why one should also use the ISO method internally for barcode and RFID.

Finally, attention was drawn to the necessity of using the matching code for the respective identification, i.e. PCN (Pharmaceutical Central Number) for pharmaceutical products, EUROCODE for blood products, HIBC for alphanumeric product codes, etc.

Hence there was no need for a hospital to have internal guidelines for a single code system. It was advisable for a hospital to use the supplier's barcode provided that this code conformed to ISO standards.

Dr. Björn Kabisch from Jena University Hospital (UKJ) outlined the advantages of a coding system that complied with ISO-15418 based on the examples of UKJ. If the same product or same patient had different designations in the various systems (at UKJ there were more than 100 systems with reference to the patient), data could be amalgamated only through the use of conversion tables that were difficult to maintain and were prone to errors. A better approach would be to use from the outset a uniform nomenclature; at Jena Hospital an unambiguous device nomenclature is being introduced based on ASC terminology, the «Intranet of elements».

One product – one reference: Health Industry Bar Code (HIBC) as the ideal case

Tobias Schneider explained the practice of active recording of the product manufacturer's barcode for registering items at



Dr. Björn Kabisch, UKJ



Tobias Schneider, UKH

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Heidelberg University Hospital (UKH). If a decision is taken in favour of an external barcode as a basis for assignment of articles, the spotlight is on the supplier. Since no databases are maintained, either by the manufacturers or barcode providers, the only avenue open to a hospital will be to contact each manufacturer and get the relevant data. Since enquiries from the hospitals are new, there are in some cases communication and information difficulties and long processing times. This is also due to the fact that initial contact to a company is established via the distributor and often he is not familiar with the barcode system.

A particular feature when recording items in Heidelberg is the existence of an error bucket. This is used to save the recording procedures that did not lead to identification of the respective device via the barcode. These are analysed by the materials' management department for user errors, master data errors or missing data from the manufacturer. If a barcode is subsequently assigned to an item, all previous errors can be later corrected: the error bucket helps to increase user friendliness since no recording event is lost and at the same time the management is given enough time to manage the data needed. Apart from the provision of barcode information, correct affixing of the barcode is also of paramount importance. Heidelberg has compiled a List of Demands on the basis of the information gained from the project:

- Use unambiguous barcode systems with identifiers (as per ISO)
- Store all information in a single barcode (HIBC is the ideal case)
- Minimum information in barcode: article number, batch/serial number/expiry date
- Barcodes should be affixed to the packaging unit and this should be torn only at the time of use.

The appeal addressed to the manufacturers is aimed at achieving 100 % ISO-conform barcoding. This would simplify documentation, enhancing its quality.

Other talks dealt with radio codes and RFID. These can be used, for example, for unambiguous identification of persons. The use of RFID for tracking patient files in the Department of Oral and Maxillofacial Surgery at J. W. Goethe University Frankfurt was demonstrated by Dr. W. Betz, supported by Mr Dettmeier. RFID trans-

ponders provide very reliable scanning at relatively low costs per piece and provide for automatic tracking of files without the need for staff. They can also be used in patient files as well as for staff and student identity cards.

Linking people, data and systems

Heinrich Oehlmann, chairman of the DIN Standardisation Committee AutoID (NA 043-01-31) highlighted that in the case of barcode and RFID it was only the data media that were already fully standardised. Conversely, in the case of the link function there is often information missing, which still affects widespread areas of the hospital organisation.

But neither the barcode nor RFID is really new even if attempts at developing them go back several decades. What is new is their significance – the greater the anti-error culture, the more extensively will barcode and RFID be used.

Accordingly, one purpose of the meeting was to make the audience more aware of the benefits of the standards. The global ISO standards for unmistakable barcodes on packaging, etc. cover the area of identification standards throughout the entire supply chain and are supported by all branches and countries. That facilitates partnerships between different sectors, not just at local and national level but also on a global scale.

Mr Oehlmann explained the content of the relevant standards, e. g. of ISO 22742. This standard governing the use of a barcode on products and packaging is aimed at using unequivocal numerical ranges which, by the way, have capacity not just for 3, 4 or 5 characters but for up to 18 characters and more.

The know-how also features modules such as standard DIN 66401, the unmistakable identification mark (UIM) for an overall reliable identification even for the smallest products, e. g. surgical instruments and anything with dimensions up to 3 x 3 mm, which have to be recorded free of errors and reliably.

Mr Oehlmann went on to say that anyone could obtain the standards regulating barcode and RFID applications from standardisation bodies. On the subject of YES or NO to standards, the following frequently asked questions will help:

Is it necessary to agree on standards? – YES, because without a standard any so-



The ideal case: the barcode is affixed to the packaging unit using HIBC

lutions will merely be closed solutions that will not be understood by other systems. Is it necessary to agree on a barcode? – NO, because the state of the art is to record all codes in «mix».

Is it necessary to agree on a specified numerical structure? – NO, provided that these can be identified as being ISO conform, such as ASC, GS1 or HIBC.

These answers also meet international requirements. Precise information from the FDA Unique Device Identification (UDI) project, the Global Harmonization Task Force (GHTF) and the EU are aimed at application of ISO standards (see *Central Service* 1/2011). As such, long-term users of the Health Industry Bar Codes (HIBC) today are not just ISO- but also UDI-conform.

Despite globally accepted standards, the need to overcome barriers to enable optimal use of barcodes was expressed. Typically, these barriers do not derive from technology but from unilateral interests and incomplete consultation. Marketing strategies that make false claims stating that the existing unique numbering systems, for example, should be converted to short codes based on EAN & GS1 to achieve uniformity also constitute a barrier to smooth use of ISO standards for barcode and RFID.

A zero failure rate based on barcode will not be assured by using similar numerical ranges from the consumer goods' branch but only through the use of unique codes, something that can be implemented by means of the Health Industry Bar Codes (HIBC) standard.

«HIBC offers more» was the view put forward by the speakers. For example, it offers freedom of choice as regards the ISO barcode, matrix code or RFID. The choice

of unique identity is left to the responsible manufacturer's discretion and the hospital. The laboratory and everyday practical setting are well advised to avail of the manufacturer's offers regardless of what barcode is offered. The hospitals themselves should go as far as to demand ISO-conform marking, because this and the requisite

product information are the optimal outcome that can be achieved.

This meeting will no doubt have a positive impact on further development of organisational forms and their IT-based optimisation. The organisers have already set a date for the next meeting on 27 September 2012.

Annexes to this report on the topics «Expertise for unambiguous identification» and «Standards for automatic identification and data recording» can be obtained from the author. ■