The Global Language of Business

Good morning, Mr. Jones, here is your medication

GS1 standards for precise patient identification

Patient identification: A vital aspect of patient safety

Patient misidentification constitutes one of the most serious risks to patient safety in hospitals or clinics. Today identification of the patient by the caregiver is still generally checked manually. This human interaction is inevitably prone to error and may result in patient harm when carrying out vital activities such as surgery, medication administration, blood transfusions, or other medical procedures. Such errors can also have a significant economic impact.

It is the primary responsibility of caregivers to check the identity of patients and match the correct patients with the correct care before that care is administered. However, healthcare processes are complex and resources are scarce. Deficient systems and processes, combined with high workload and stress, can lead caregivers to make mistakes or fail to prevent them.

The World Health Organization identified "patient misidentification as a root cause of many errors". This led the Joint Commission for Accreditation of Health Care Organizations (JCHAO) to list improving patient identification accuracy as the first of its Patient Safety Goals already introduced in 2003, and it continues to be an accreditation requirement.

About 10% of inpatient episodes result in errors of some kind, of which half are preventable.[1]

Patient identification errors were at fault for 13% of surgical mistakes and 67% of transfusion mix-ups.[2]

8 to 14% of medical records include erroneous information tied to incorrect patient identity.[3]

Benefits of implementing an automated patient identification system

At Charing Cross Hospital (UK), patient ID checks were only being done 17% of the time before barcoded identification wristbands were implemented; **after implementation, this increased to 81%**.

Dubuis Health System (USA) achieved **a nine month return on investment** in an automatic patient identification system; **Norman Regional (USA) saved US$380,000 in one year**.

Houston Medical Center (TX, USA) achieved **30% reduction in patient ID errors in the first three months of implementation** of its point-of-care barcode wristband system for glucose testing. Besides more accurate patient identification, hospital staff could spend significantly more time treating patients: at least two minutes per patient are saved. With an average of 200 patients triaged in the Emergency Department per day, over 6.5 hours are saved in identifying patients for glucose testing.

"Nursing and laboratory personnel no longer have to manually key in the patient's account number. This allows them more time for patient care. The barcode also gives our information systems accurate data automatically for charting in the patient's medical record and to appropriately bill the patient's account."[4]

Beth Benefield, Executive Director of Information Technology and Imaging Services, Houston Medical Center

[1] Source: NHS, UK – [2] Source: Joint Commission International Center for Patient Safety – [3] Source: HIMSS - [4] Source: Precision Dynamics Corporation

GS1 standards are:

- **Global** – GS1 standards ensure globally unique identification and enable cross-border compatibility of IT solutions.
- **Robust** – Today, in various sectors, over 6 billion transactions per day are enabled by GS1 standards, demonstrating and confirming its robustness.
- **User-generated** – GS1 standards are built and maintained collaboratively by volunteers from across the world from hospitals as well as multi-national suppliers.
- **Scalable** – GS1 standards meet the needs of a small rural hospital as well as a multi-national supplier.
- **ISO/IEC compliant** – GS1 standards utilise ISO/IEC Standards and are referenced within ISO/IEC Standards.

GS1 standards enable global automatic identification

The GS1 system of standards is built around and upon several elements, including:

- **GS1 identification keys**
  used to distinguish any object, location, patient or caregiver, so interested parties can use it as a 'key' to get information related to them from a database.
- **GS1 Application Identifiers**
  present a standardised way to encode additional variable information, such as expiry date, lot number and serial number, which is now becoming a regulated requirement in some countries and can be critically important in the case of a product recall.
- **GS1 barcodes**
  provide a portfolio of data carriers including GS1-128 Linear barcodes, GS1 DataMatrix (two dimensional barcodes) and others.

From 2011 to 2012, a GS1 work group, consisting of volunteers from the global healthcare community, developed a new standard to meet the specific requirements of identifying patients and caregivers in a healthcare environment.

The Global Service Relation Number (GSRN) is the GS1 identification key used to identify the relationship between an organisation offering services (in this case, any healthcare provider) and the recipient of services (in this case, the patient). The same identification key can be used to identify the relationship between the organisation offering the service and the provider of the service (in this case, the caregiver), but using a different Application Identifier to clearly distinguish the role. **The data string** is comprised of the:

- **Application Identifier**
  provides the meaning of the data field which follows, allowing the same GS1 data carrier to encode multiple data fields.
- **GS1 Company Prefix**
  allocated by GS1 Member Organisations to member companies and users, enabling them to allocate GSRNs.
- **Service reference**
  allocated by the member company or user to each different person.
- **Check digit**
  provides extra security by preventing accidental key stroke errors.

Recognising that it may be useful to be more granular when identifying a patient, the service relation instance number (SRIN) allows specifying the relevant instance within the care process. The AIDC data carrier should then carry both the GSRN and SRIN, and allows simultaneously capturing of the patient ID and instance. This would, for example, allow the capturing of different instances of care during laboratory sample collections.

AIDC systems reading the barcode on the patient's wristband allow automatic capturing the GSRN and SRIN, which in turn provides immediate access to patient information from the hospital's information system and enables the sharing of relevant patient information.

GSRN is a formally approved ISO standard, also adopted by CEN. It is referred to as CEN ISO TS 18530 and this technical specification provides good practice based on various use cases as well as the experience gathered by users from blood transfusion. It helps bridging other global standards like ISBT 128 to GS1 standards, thus contributes to higher patient safety.

With the appropriate GS1 Application Identifiers, this identification key allows for clearly defining the role (caregiver or patient[5]) and precisely specifying the instance within the care process.

70 regulatory agencies worldwide accept the use of GS1 standards in healthcare.

[5] In ISO terms: 'Patient' is the Subject of care (SoC), any person who uses, or is a potential user of a healthcare service. 'Caregiver' is the Individual provider, any person who provides or is a potential provider of a healthcare service.

GS1 standards in action!

Medication verification and positive patient ID at Geneva University Hospitals (Switzerland)

Hôpitaux Universitaires Genève

L'ESSENTIEL, C'EST VOUS.

In order to better manage the risks of treating cancer patients with cytostatics, Geneva University Hospitals (HUG) implemented several process enhancements. A crucial part of this was to automatically capture all relevant information at the point-of-care, for which caregivers use a trolley with a laptop computer and a barcode scanner. Before administering medication, the caregiver scans the GS1 Data Matrix barcode on the bag containing the cytostatic, giving access to the product identification key (GS1 Global Trade Item Number or GTIN), and the bag's serial number. The caregiver also scans the GSRN from the barcode on the patient's wristband. Having more reliable access to product and patient information has helped to address and eliminate medication errors associated with incorrect patient, incorrect medication and incorrect timing. After a few years of experience, HUG decided to deploy patient ID wristbands with GS1 GSRN across all the hospital groups to support other processes, such as patient transport, etc.

Total visibility at St. James's Hospital (Ireland)

ST. JAMES'S HOSPITAL DUBLIN · IRELAND

The National Centre for Hereditary Coagulation Disorders (NCHCD) located at St. James's Hospital, Dublin, manages patients with inherited and acquired bleeding disorders. In the 1980s, Haemophilia patients became infected with HIV/Hepatitis due to blood product contamination, some of them even after the product was recalled, simply because it couldn't be traced back to the patients. St. James's Hospital completely redesigned the system giving them total visibility of each unit of Haemophilia medication. The key to the success of this project involved harnessing the power of GS1 barcodes. Each patient is allocated a unique identifier (GSRN), as is each unit of medication (GTIN + serial number) and each location in the supply chain (GLN – Global Location Number). For self-treatment at home, patients use a smartphone to scan the barcodes and connect to the hospital's information system. In the event of a recall, the location of 100% of any selected batch of product can be identified within 10 minutes and appropriate action taken.

About GS1 Healthcare

GS1 Healthcare is a global, voluntary user community bringing together all healthcare supply chain stakeholders, including manufacturers, distributors, healthcare providers, solution providers, regulatory bodies and industry associations. The mission of GS1 Healthcare is to lead the healthcare sector to the successful development and implementation of global standards by bringing together experts in healthcare to enhance patient safety and supply chain efficiencies. GS1 Healthcare members include over 70 leading healthcare organisations worldwide.

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