

Reducing Medication Errors - Ensuring the '5 patient rights'

'The right product for the right patient at the right time in the right dose through the right route'

The situation

Medication error adverse events can occur every day in every hospital worldwide and are drawing increasing media attention. They can have far reaching consequences which can include: additional treatment, disabilities (temporary or permanent), or even in extreme cases - death.

Several studies, in different countries, indicate that adverse effects from medication errors represent a significant problem for Healthcare worldwide.

Some notable examples are:

- Spain - a study⁽ⁱ⁾ indicated that 9.3% of hospital stays incurred a serious adverse event, with medication errors being the main cause (37.4% of such events).
- New Zealand - the Ministry of Health⁽ⁱⁱ⁾ found that each year about 5,000 patients are subject to medication errors. As a result, about 150 patients die, over 400 are permanently disabled and nearly 3,500 are disabled for less than one year.
- USA - medical errors in hospitals result in preventable adverse events with up to 98,000 patients dying each year, which costs the sector US\$ 138 to 192 billion annually. Medication errors account for 7,000 of these deaths.
- UK - the National Health Service (NHS) has calculated that approximately 60 patients die each day in hospitals due to adverse drug errors. Around 10% of admissions are likely to suffer from patient safety incidents, which are estimated to cost around GB£2 billion/year in prolonged hospital stays alone. In addition, as many as 400 people per year die or are seriously injured in adverse events involving medical devices.

Medication errors are rarely the fault of an individual Healthcare professional, but representative of the unsuitability, or failure, of complicated and complex Healthcare

systems. These errors can occur anywhere in the distribution system, mainly during prescription and administration, respectively 39% and 38%⁽ⁱⁱⁱ⁾.

Dispensing and transcription errors account for 11% and 12% of those. While nurses or pharmacists often intercept about half of the errors originating during prescribing, before they reach the patient, only 2% of administration errors are intercepted^(iv).

What is the solution?

Standardised bar code and RFID^(v) -based systems can automatically match the *right patient* with the *right treatment*. Automatic Identification and Data Capture (AIDC) systems significantly reduce the risk of medication dosage errors and allow caregivers to focus on what really matters: **patient care**.

Supermarkets around the world are using bar code technology to scan and verify the right price for the right product. They can also trace their products precisely, which is very advantageous in a recall situation. Most hospitals and/or Healthcare professionals have to rely on manual checks when administering drugs or using medical devices and cannot realise these benefits created in retail by the use of bar codes technologies.

Examples of deploying this technology include:

- Gerle Ziekenhuizen, Apeldoorn, the Netherlands introduced bedside bar code scanning which resulted in a reduction of administration errors of 74% (from 3.10% to 0.84%)^(vi).
- Chelsea and Westminster Healthcare NHS Trust^(vii), UK, introduced a robotic dispensing system, which allowed the hospital to reduce dispensing errors by 67% from 2.7% to 0.9% of prescriptions.
- Brigham & Women's Hospital, Boston, USA, introduced bar codes in the drug distribution

system which resulted in error reductions for wrong medication and wrong dose/strength with respectively 53% and 58% and the 'wrong dose' form was even eliminated^(viii).

Why isn't everyone using AIDC in Healthcare?

Surveys show that less than 10% of hospitals worldwide are using Automatic Identification and Data Capture (AIDC) systems up to the point-of-care, but the hospitals (and patients) using it are gaining significant benefits. If the solution is that simple, why isn't everyone using AIDC?

In the consumer and retail sector, open, technology-independent global standards (GS1 Standards) permit full interoperability and compatibility; however the Healthcare sector has been slow to adopt these global AIDC Standards.

The Healthcare sector is further plagued by the introduction or enforcement of local requirements which jeopardises the realisation of health, economic and efficiency benefits of AIDC. These local requirements are mostly related to national product registration or reimbursement purposes, but using national identification numbers to manage the Healthcare supply chain is inefficient and introduces trade barriers amongst the stakeholders.

National numbering schemes were not designed to enable automatic identification; therefore the product registration information does not necessarily relate to all available medical device or pharmaceutical products. A global GS1 Identification Key can easily be linked to the national identification number in a cross-reference table.

Healthcare providers are also facing the challenge of many competing priorities, resistance to change and increasing economic challenges.

What can governments and regulators do?

1. Endorse *global standards* to enable AIDC systems throughout the Healthcare supply

chain worldwide.

A GS1 survey showed that 64 out of 84 countries use global GS1 Identification Keys for consumer sector supply chain purposes.

2. Issue policy guidance on how AIDC (and Information and Communication Technology [ICT] in general) can improve patient safety.

In 2007, the UK Department of Health issued a policy guidance document^(ix) "... recommending that the GS1 System should be adopted throughout the Healthcare system in England".

3. Fund investment projects.

In 2008, the New Zealand Ministry of Health launched a NZ\$101 million Medication Safety Project to upgrade all District Health Board hospitals in New Zealand^(x).

- (i) Council of Europe - Creation of a better medication safety culture in Europe: Building up safe medication practices Expert Group on Safe Medication Practices (P-SP-PH/SAFE) (2006)
- (ii) "Adverse events in New Zealand Public Hospitals: principal findings from a national survey" Ministry of Health, Davis P, Lay-Yee R, Briant R, et al
- (iii) "Systems analysis of adverse drug events" - ADE Prevention Study Group, Leape, Bates, Cullen et al. - JAMA 1995 and "Using chart review to screen for medication errors and adverse drug events" - Kaushal - Am J Health System Pharm 2002
- (iv) "System analysis of adverse drug events" - Lepe, Bates, Cullen, et al - JAMA 1995; 274:35-43
- (v) Radio Frequency IDentification
- (vi) "Het effect van elektronisch voorschrijven en elektronische toedienregistratie met barcodescanning op het optreden van medicatie toedienfouten", Elsbeth Wesseling, Gerle Ziekenhuizen, 10 November 2006
- (vii) Chelsea and Westminster Healthcare NHS Trust, K. Robertson Ref. "Coding for success - Simple technology for safer patient care" - UK Department of Health - 16 February 2006
- (viii) "Lessons learned with Bar-coding and eMAR", Tom Cooley, Brigham and Women's Hospital at GS1 Healthcare Conference 13 - 15 June 2006, Minneapolis, USA
- (ix) www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_066082
- (x) www.gs1.org/docs/healthcare/Medication_Safety_NZ.zip



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