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## **Drug tracking to remedy healthcare disorder**

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Research into identification technology may help to reduce the number of patients who receive the wrong medication, writes John Collins

Mention the Irish health service and most people immediately start to think about overcrowding, waiting lists and patients on trolleys. Mention technology and the Irish health service and one of the first things that springs to mind will probably be PPARS - the HSE's project to computerise the payroll system for health workers. It famously cost €186 million, pays salaries to just 30,000 of the health service's 100,000 staff, and further development of the system has been mothballed.

But just as the IT industry globally has begun to apply more technology to healthcare provision, Irish organisations are involved in some cutting edge projects, particularly around the crucial area of drug administration.

Patients receiving the wrong medication, the wrong dose, or drugs that can adversely react with other treatments is a major problem worldwide and two research projects with a significant Irish input could help solve the problem. Figures presented at a recent Dublin conference on the European healthcare supply chain suggested that 50 per cent of the estimated 72,000 deaths in the UK's NHS each year are caused by medication errors.

Last month, the State Claims Agency said that 77,174 adverse events were reported to it in a 21-month period to the end of last September. Of these, 33,075 related to slips, trips and falls by patients, but the next biggest category were 6,840 "medication incidents", which range from medication being missed or given at the wrong time to the wrong drugs being given.

A European Commission-backed project is now looking at how medicines can be tracked from the manufacturing facility to the point where they are given to patients. It is part of the broader Building Radio Frequency Identification Solutions for the Global Environment project, which has received €7.5 million to look at how RFID tracking technology can be used more effectively by applying global standards.

According to John Jenkins, from the GS1 in Europe Healthcare Initiative which is co-ordinating the project, the Pharma Traceability Pilot is driven by the need to improve patient safety, which the statistics show is a major issue.

"Why can't we, in hospitals and in the application of medicines to patients, adopt proven technology, that has been in place in the retail sector for years?" asks Jenkins. "There is very little use of automatic identification and data capture in the health

sector." In addition to enhancing patient safety, Jenkins says the application of technologies such as RFID and data matrix barcodes can also provide cost savings for manufacturers, distributors, hospitals and patients by making the supply chain more efficient.

Although Jenkins doesn't dwell on it, clearly another major driver is the problem of counterfeit drugs entering the supply chain, which is a growing problem for the major drug manufacturers.

The ultimate aim is to provide total traceability of each dose of medicine as it travels from the production facility to the patient. By giving each medical professional and patient a unique identifier, it is hoped that giving the wrong drug or dose to a patient can be eliminated.

The current phase of the project is tracking drugs from production at Roscommon-based antibiotic manufacturer Athlone Laboratories to a hospital pharmacy in the UK. Jenkins explains that Athlone Laboratories has been supplied with a combination of hardware and software so that the drug packaging can be marked as it comes off the production line at high speed. "The technology is proven in the tobacco and beverage industries - it's complex but proven technology," explains Jenkins. "We are currently using RFID tags at the pallet and carton level, but in the future it could be used at the patient package level as the costs come down."

A group at IBM's software lab in Dublin is taking a different approach to solving the same problem of medical errors. It has further developed language analysis software, currently used in search and spelling correction functions in IBM products and is applying it to ensure that health professionals have the pertinent information at the time of patient treatment.

"We didn't believe that IBM or the industry had the full vision of what this software could do," says Marie Wallace, senior development manager at the IBM Software Lab. "We wanted to show this could be a game changer."

Her team has spent three years enhancing IBM's Language Ware technology so that it can be used to search for context and meaning in vast amounts of unstructured data. One of the first areas they are looking to apply their work to is in health, as Wallace says it is an area with lots of unstructured data which is valuable if analysed properly.

"By helping analyse medical knowledge it is a real life problem that needs to be solved, but the technology is domain agnostic and could be applied to a range of industries," she says.

Wallace says the IBM system will be able to speed up the time to market for new drugs and help to ensure hospitals can be more reactive to potential problems.

"When a drug is taken off the market, it's usually due to reports of adverse reactions being reported to the manufacturer," says Wallace. "But the hospital could have observed that early on if they were able to search the available data. Rather than relying on the drug companies, it will allow hospitals to be more proactive on the data they already have."

Some of the technology is already in use. IBM completed a clinical trials portal for the International Federation of Pharmaceutical Companies which enables medical professions to search for trials using criteria in multiple languages. Wallace says IBM is now developing a system called Clinical Decision Intelligence which will allow healthcare professionals to pull relevant information from a variety of sources at the point of care.

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