

# Why is software **not enough** to ensure **data collection** in the OR?

Five reasons - and one solution!

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# Why is software not enough to ensure data collection in the OR?

So you've invested in technology, trained the medical staff, upgraded to an EHR system, updated the hospital SKUs - and still the compliance rate of usage reporting inside the operating room is low, the reports are inaccurate, the charges are missing, and countless coding errors occur. This means that the hospital has trouble meeting FDA requirements regarding digital updates to the patient's file, its inventory isn't efficiently managed, and it is losing money, a lot of money - needlessly so.

Many hospitals attempt to deal with these challenges by purchasing supply chain management software. By 2026, the healthcare information industry is forecasted to grow by 8.2%. It seems that wherever we turn, we hear terms like Data Mining, Data Analysis, Big Data. Hospitals utilize advanced software solutions to improve processes, streamline workflow, and optimize resources. Yet while these solutions specialize in data management and analysis procurement processes, they are not suited to the specific needs and work conditions in hospitals, resulting in deficient data collection.

Any effective solution must answer the changing and exclusive needs of operating rooms, which differ greatly from other work areas.

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For instance, the process of dispensing of items is carried out in the OR by the medical staff, which does not specialize in supply management. In many ways, this process diverges from that of other logistics systems, in which the dispensing is done in a dedicated area such as the cashier or in the warehouse, against a receipt or a delivery request.

Another distinguishing factor of OR data collection stems from the structure and uniformity of the barcodes. While in other industries the structure and the contents of the barcode are uniform, giving organizations the ability to rely on the barcodes received from the suppliers, in the medical field the reality is completely different. Hospitals cannot rely on the manufacturer's bar code: It is necessary to attach an internal barcode sticker to the items, creating additional work for the OR staff registering the item into the hospital stock. Add to this the fact that hospitals are increasingly moving toward a consignment model, which requires precise charge capture and a shared management system. Taken together, these factors raise a pressing need to create OR-tailored supply chain management solutions.



**Yet first it is crucial to understand why collecting information in the OR is vital. How does it affect supply chain management and the hospital's cash flow? From this understanding, clarified below, the need to improve the ability to collect operational data as part of the medical procedure, with minimal reliance on the human factor in the OR, will come into focus.**

## **The financial dimension - Data Integrity is Worth Money**

Gathering information in the OR has enormous economic implications. First and foremost, it gives us the ability to know how much surgical procedures cost.

Today, hospitals rely on historical DRG repositories, which in turn rely on statistical past analyses and general cost studies. Times have changed, technologies have changed - there is no reason to make economic forecasts based on old data.

An average hospital consumes about 5,000 implants and medical devices a month. Although hospitals strive to record each item individually, the level of reporting today is below 60%. In other words, the hospital has up-to-date information only on around half of the implants used. Why is the reporting level so low? Take items such as sewing thread or staples: Though they are present in almost every procedure and can run up costs by \$200 in some cases, they are not reported at all. In addition, items that cannot be tagged (such as sterile orthopedic implants - screws, plates, etc.) or bulk items are often not reported.

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Add to this the time spent on coding errors and the need to submit applications for reimbursement from insurance companies or Medicare programs (which often require applications within 72 hours) and you have a full-fledged recipe for inefficient cost retrieval. Today, there is a whole market of companies that offer this service at a fee, and hospitals share with them the money received from the insurance company and government programs.

# The human dimension - Why Shouldn't Hospitals Rely on the Medical Team to Collect the Data?

Medical teams function under often stressful circumstances and focus on treating patients rather than on office work. This, alongside documentation that is carried out manually in notebooks or in complicated ERP programs, is a formula for error.

Research shows that procurement software and hospitals' information management systems (ERPs) that are advanced and designed for health systems in practice slow down nurses' work even more than manual documentation.

Indeed, human error, including coding errors and lack of reporting, is the main reason for the low compliance rate in the OR. Therefore, no matter how advanced the management software is, if it does not have the right tools to collect the information without involving the medical staff it is not an appropriate solution that can achieve 100% reliability and integrity of data.

And for anyone who is wondering how can there be so many mistakes:

**Which barcode you would scan in the images below (which show the back of a medical device package)?**



## **The cataloging dimension - The Importance of Maintaining an Updated and Complete Item Master**

The medical staff will rightly claim that even if it adheres to report usage of each item, and even if it receives training on logistics software, the software sometimes simply does not recognize the item in the operating room.

The first step in maintaining an updated item master begins with the consumption of the medical device. The medical staff needs to report the item usually through scanning techniques. If the existing software does not identify the scanned item, the incomplete information needs to be completed from other sources.

Most of the hospitals receive medical implants according to the manufacturer's SKU and then give the implants an internal catalog number. This SKU does not specify an expiration date, production series, and other essential information about the item since that would require much work and the ability to read multiple manufacturers barcodes.

The manufacturer's SKU often changes, items age, new suppliers are added, and as a result, the maintenance of the item master becomes one of the hospital's biggest problems, with financial and clinical implications.

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## **The clinical dimension - When Full Documentation Equals Patient Safety**

Generally, patients are oblivious to any logistic processes. We would probably never hear a patient before surgery asking a nurse to check the implant expiry date, even though it could be a life-threatening case. The patient relies on the hospital. The hospital relies on the medical staff.

Occasionally there is a recall, which requires the hospitals and the supplier to locate all items and the patients that use the implants. This is an impossible task when there is no complete listing of all items used and full documentation in the patient's medical file. A thorough process would be terribly time consuming.

Although the importance of the integrity of the information and the synchronization of the data is essential, unfortunately, the consolidation of such information is not the norm.

## **The regulatory dimension - Medical Device Reporting**

Medical Device Reporting (MDR) is the FDA regulatory tool for monitoring the performance of medical devices. When suspicion arises as to the safety of a product, medical organizations must provide critical information such as patient information, date, description of the case involving the medical device, brand information - product code, model number, serial number, expiration date, etc.

Yet in reality, without the consolidation of clinical and logistic information and high documentation compliance by the medical staff, hospitals are unable to provide the above information despite their obligation to do so. This is one of the main factors driving hospitals to purchase information management software.

Most of today's tools rely on technologies that have been adapted to work in the operating room but do not fully address the problems mentioned here. In other words, advanced software does not include advanced data collection in the field. The full solution for consumption reporting and charge capture in the operating room has not yet been formulated.

**Solution:**  
**Meet the sixth dimension - The Digital Dimension**  
**(Machine Learning)**

The digital dimension is primarily based on a change in perception in the OR - the human is no longer part of data-processing. The solution is fully automated: The medical team does not need to enter any information.

In the digital dimension, the data is the goal rather than the means. The hospital must strive for 100% documentation in the OR - from medical devices and medications to a single sewing thread. Technologies that can autonomously collect data from the operating room, exist in the world of **Machine Learning**.



Machine learning is a subset of computer science and artificial intelligence that refers to statistics and optimization. The main goal is to handle real-world data for solving a particular problem when conventional computer software is insufficient. One of the capabilities is, for example, the solving of an identification problem that a human expert can solve but is unable to produce specific software because of the rules of identification change frequently, just like in the operating room.

Artificial intelligence is not uncommon, and we are already enjoying its services. In the near future, AI processing will be increasingly utilized in the field's end devices, introducing new image processing technologies, OCR, ICR, microphones or even sensors. These can collect, process, and manage the information optimally.

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The good news is that the future is in many ways already here. Hospitals are already investing money in comprehensive data collection solutions to help complement their existing ERP systems. Software companies and ERP systems, for their part, are also investing money in developing such solutions. This trend is expected to intensify as more hospitals recognize the benefits of automated data collection.

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