

# EXCLUSIVE ACCESS



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ALLIANCE

EMPOWERING INTELLIGENT DECISIONS THROUGH DATA CAPTURE

## ZIUZ MEDICAL: PUTTING PATIENT SAFETY FIRST

### PUTTING THE PIECES TOGETHER

One of the fundamental goals in healthcare is improving patient safety. Patient safety can include anything from transferring information to administering the right medication. With so many factors contributing to the daily battle, it is comforting to know that ZiuZ Medical has placed the identification and validation of automatically dispensed medication firmly in the completed column worldwide.

ZiuZ Medical is a visual intelligence specialist based in the Netherlands. ZiuZ helps pharmacies and hospitals make their automatic medication dispensing systems safer. Once a pill leaves a bottle, it can lose its identity, especially when being handed from one busy staff member to another. Many pills look very similar, and staff members may not be able to remember exactly which is which based on sight alone.

Automatic dose dispensing came to the rescue with the ability to selectively package pills together. This means only the medications intended for a specific patient are delivered to that patient. But what happens if, during that automation process, the wrong pills get placed into the package? Using 13 parameters, near-infrared (NIR) image analysis technologies, and intelligent algorithms, ZiuZ can identify individual pills or capsules within each bag.

This automation process moves at a rate of 6 inches per second, giving each medication pack an approval or rejection, and ensuring only the correct medication is placed in each bag. At that speed, errors are difficult to detect. The value of the automated system requires measuring the risk of error against the requirement for patient safety. The equipment in these automatic dispensers must be as nearly perfect as possible to ensure that mistakes are avoided at all costs.

### GETTING A GRIP ON QUALITY

A crucial element for patient safety is the dispensing of the right medications consistently, regardless of the time of day, the staffing, and the workflows at that moment. Because of each patient's unique needs, the treatment process and drug requirements can become complicated. Ensuring that each patient gets the correct dosage of the correct drug at the correct time is not only vital, it's mandatory. Errors can be fatal.

In a study titled, "Medication errors: the importance of safe dispensing," published by the British Journal of Clinical Pharmacology, researchers found the most common causes of dispensing errors were: being busy, being short-staffed, being subject to time-constraints, fatigue of health-care providers, interruptions during dispensing, and look-alike/sound-alike medicines (1).

Automatic dose dispensing and automated machines have been recommended as one potential means to improve efficiency and patient safety, and they are now being widely used in a growing number of hospitals (2). These machines enhance the efficiency of medication distribution, but their capacity to reduce medication errors is controversial and includes a variety of factors that must be considered when determining their success or failure.

ZiuZ Medical created a visual intelligent solution incorporating the top industry image-based barcode scanning software from Code Corporation®. A patient's life can depend on having a solution that automatically verifies the contents of each pill pack, ensuring it contains the correct medication prescribed for that him or her. ZiuZ's system could be the answer to reducing medication errors and improving hospital and pharmacy efficiency.

### TESTING, TESTING, 1 2 3

The first step was to find a way not only to identify each pill within every given medication pack assembled but also to find a way to compare that information with what should be located inside each package and recognizing errors. This process required including difficult-to-recognize medicines and capsules, and situations with broken pills or crumbs.

The ZiuZ intelligent system started with a detailed photograph of the transparent side of each bag to show the contents of the pouch, but it needed the ability to reliably scan and decode the 1D and 2D barcodes printed on the reverse side of each pack containing the details of which medications should be found inside. Without this ability, their technology would not be able to perform the verification/comparison to deliver a match or error result. The need to find an enterprise-grade, high-performing scanning solution proved a challenge – until they discovered Code's CortexDecoder.

In healthcare, as in other industries, time is a valuable resource. However, unique to healthcare, life and death decisions are made in seconds. The right scanning solution would make checking packs of medication fast and accurate while reinforcing a superior product reputation. ZiuZ turned to CortexDecoder barcode scanning software. Integrating CortexDecoder into the med-pack checking device delivered a scanning experience that exceeded all of their expectations.

Before finding CortexDecoder, ZiuZ Medical used a decoder that had an error rate of .05%. This meant 1 in every 200 barcodes was misread and the wrong medication could slip by or make its way to the wrong patient. ZiuZ found this unacceptable and began searching for a decoding algorithm that could keep up. The decoding software that ZiuZ needed had to deliver on three essential things:

- The error read rate needed to be lower
- It needed to be able to read 2D barcodes moving at a speed of about 6 inches per second
- It had to flawlessly decode from the reflective surface of the shiny, thin foil packs that tended to wrinkle easily

It was a tall order for any barcode scanning software to hit even one of the three items on their list. When ZiuZ found a decoder with the ability to exceed all three, they were amazed.

ZiuZ tested several decoding platforms, finding issues with each along the way. One platform's business model didn't match that of ZiuZ Medical with a licensing structure that was too complex. And others simply did not perform as well as they needed, falling short on several items. Fortunately, those failures led to ZiuZ discovering the power and versatility of Code's CortexDecoder. After hearing about Code and arranging for a free test of CortexDecoder, they knew they had discovered the decoding solution they had been searching for.

### ENTERPRISE BARCODE SCANNING SOFTWARE SOLUTION: CORTEXDECODER

In all accounts, the performance given by CortexDecoder exceeded their expectations. The error rate experienced with the previous decoder was nearly eliminated. CortexDecoder was able to scan thousands of barcodes before even one could be identified as unread (if they found any at all).

The 2D barcodes that print on the back of the medication packets hold the information about which pills and how many are supposed to be in every pack, and that information must match the photograph that the machine takes of the transparent side of the bag. These dispensing machines only have one chance to read each barcode that zooms by. CortexDecoder reads these barcodes with almost zero-miss reliability, allowing the verification process to happen with both speed and accuracy. ZiuZ Medical found that by integrating CortexDecoder into their system, their machines became more efficient and helped them move closer to improving patient safety worldwide.

"CortexDecoder provides the scan performance we have been looking for," said Johan van Duijne, Product Manager for ZiuZ Medical. "Not only did the decoder perform better in our machine than we expected, but the customer support provided by Code Corporation made choosing their decoder even easier."

#### Works Cited:

Cheung, Ka-Chun, Marcel L Bouvy, and Peter A G M De Smet. "Medication Errors: The Importance of Safe Dispensing."

British Journal of Clinical Pharmacology 6 (2009): 676-680. PMC. Web. 12 July 2018. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2723208/>

Guidance on the interdisciplinary safe use of automated dispensing cabinets Horsham (PA) Institute for Safe Medication Practices; 2008[cited 2009 Sep 8]. Available from: [http://www.ismp.org/Tools/guidelines/ADC\\_Guidelines\\_Final.pdf](http://www.ismp.org/Tools/guidelines/ADC_Guidelines_Final.pdf)



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