

Taiwan Cathay General Hospital improves their chemotherapy medication administration process with the MioCARE medication administration

The company:

Taiwan Cathay General Hospital

Cathay General Hospital is a medical center located in the center of Taipei, serving the community and people of northern Taiwan with quality healthcare for over 30 years. Relying on its strong reputation among the community and the nation, Cathay General Hospital has expanded to become a healthcare network which includes Hsinchu, Sijih Branch and Neihu Clinic.

Cathay General Hospital was awarded the title of “Medical Center” by the Taiwan Joint Commission on Hospital Accreditation. This is the highest level of accreditation, and an honor only 3 percent of this nation’s hospitals enjoy.

The challenge:

To add value to a complex medication administration process including repetitive double-checking and confirmation.

The conventional chemotherapy medication administration in Cathay General Hospital, so called “3 read and 5 checks”, is a complex, multidisciplinary process, which involves repeated, time-consuming checks and confirmation steps. The process requires two nurses to check each medicine type, confirm against the doctor’s order form, administer the medicine and afterwards document on the treatment sheet.

Double checking procedure

The first challenge comes from the need for repetitive checking of the medicine type and dose by two nurses. For one treatment of a ward with 6 patients, there will often be as many as 60 different types of medicine coming from the pharmacy each morning with each patient requiring 10 different drugs for a treatment. There are many areas for potential mistakes due to the wide varieties of chemotherapy drugs and complex delivery processes.

All medications are validated by two nurses by visually confirming and speaking out loud the prescription at the nurse station and again at the bedside before the drug dose is administered.

Even with the double process of reading aloud the drug name and a visual check against the paper order the process still has the potential to introduce errors. This is due to the similar pronunciation of some drug names and the regular interruptions to the process due to questions from patient’s relatives or colleagues.

Finding another nurse for the double-check process can also be time consuming, as other nurses are busy with their own work.

All medicines need to be double checked against the doctors order by two nurses both visually and orally. This happens at the nurse station and again at the bedside.



國泰綜合醫院
Cathay General Hospital

Background

The MioCARE A100 with integrated barcode scanner and the MioCARE Medication Administration Solution were introduced into Cathay Chemotherapy administration workflow.

Location

Taipei, Taiwan

Product

- MioCARE A100 Mobile Point-of-Care tablet with barcode reader
- MioCARE Medication Administration Solution

Applications

- Patient identification using barcode wristbands
- Barcode scanning allowing drug checking against the Hospital Information System (HIS)
- OCR (Optical Character Recognition) IV pump flow-rate check
- Chemotherapy work-flow progress is up to date and available between shifts
- Countdowns support timing for drug dose
- Drug information at the bedside

Benefits

- 81% time saved through the reduction of repetitive tasks
- Streamlined shift information exchange
- Reduce memory load on complex processes
- Reduced opportunity for errors in patient identification
- Improved bedside patient education
- Real-time updating of medication records



The nursing handover relies on documentation and oral communication with potential for errors due to interruption.



Sometimes there is not enough space for the nursing cart.

“The MioCARE medication administration software has been designed with a very responsive and straightforward interface. It works right out of the box and even the new nurses without any training on the system can understand how to use it first time.”

A quote from the user satisfaction questionnaire of Cathay General Hospital's MioCARE chemotherapy medication

Nurse information exchange

Nurse information exchange in the chemotherapy medication process is important to maintain a strict sequence:

- **Port flush**

The chemo port flush is an important process that must be performed between different chemo IV drugs dosing. The patient's port-A catheter must be unimpeded to avoid extravasation (the leaking of drugs) which can damage body tissue.

It would be ideal if one nurse could take care of a patient's therapy process from the beginning to the end however chemotherapy takes around 22 hours and involves at least 2 to 3 nurse shifts. More often, the therapy will be administered by at least three different nurses.

- **Handover**

With restrictions on resource, there is limited time for the patient status handover. Relying on paper documentation, oral messages and occasionally memory can introduce risks, particularly where a nurse is disturbed by other issues.

It can be a challenge to find the best way to share and track patient medication status in one centralised platform, ensuring all processes link up to deliver the correct dose at the right time.

Limited space

The third challenge is the limited space in corridors and on wards. All drug information is accessible from the laptop computer on the medical cart. But for certain type of wards, there is insufficient space for the cart. Nurses need to leave the cart in the corridor and go back and forth to get drug information and complete the drug medication record. This adds time to the process in a way that feels unprofessional.



MioCARE A100 Mobile Point-of-Care



The Solution:

MioCARE A100 mobile Point-of-Care with medication administration system

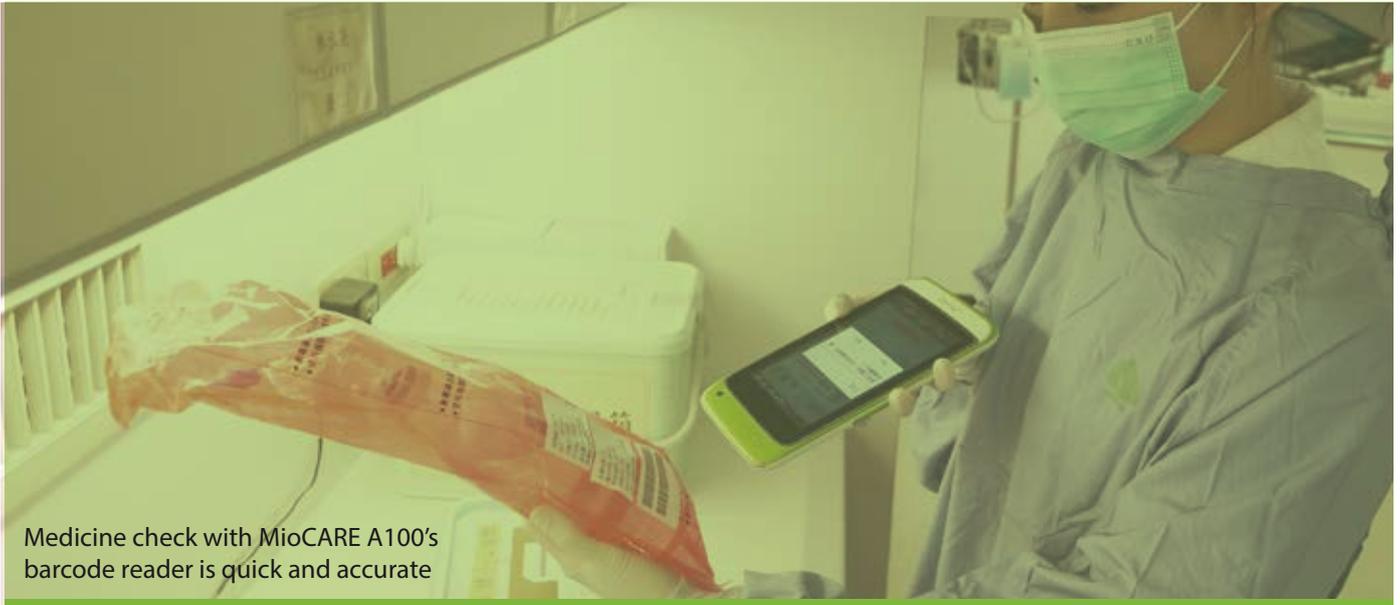
In August 2013, the MioCARE system completed clinical chemotherapy drug administration trials at Taiwan's Cathay General Hospital. MioCARE medication administration system combines two parts, the MioCARE A100, a pocket-size tablet and an application tailored for medication administration.

- **MioCARE A100**

The MioCARE A100 is splash proof (IP54 rated), 1 meter drop resistant and can be disinfected with alcohol and is ergonomically designed for all day handheld use. It features an integrated barcode scanner with WIFI connectivity and provides an effective and accurate way for medicine checking, replacing the repetitive check and reducing the probability of errors.

- **Medication Administration Software**

The Medication Administration System is an Android-based software integrated with Cathay General Hospital's medication administration workflow.



Medicine check with MioCARE A100's barcode reader is quick and accurate

Barcode scanning allows checking with the HIS record

By using the barcode scanner to read the barcode on the chemo drugs, a nurse can complete the drug check process by wirelessly matching the drug list with the doctor's prescription in the HIS system. This process replaces the voice and visual confirmation process and the need for finding another available nurse for double checking.

Workflow progress is up to date and available between shifts

Previously the nurse information exchange solely relied on verbal communication or notes. With the MioCARE medication system, the patient's latest medication status is wirelessly updated to the central sever. The next shift can access the same information from their MioCARE A100 device, showing the current medication status and including a reminder of the time for next medication with a sound alerts and LED reminder.

Drug information at the bedside

Unlike the medical cart nurses can easily take the MioCARE A100 to the bedside providing access to drug information allowing them to explain the effect and side effects to patients.

Patient identification using barcode wristbands

The barcode reader on the A100 allows the patients barcoded wristband to be scanned at the bedside before each drug dose is administered reducing the risk of errors with patient identification and checking with the HIS to ensure that the right drug is administered to the right patient at the right time.

OCR (Optical Character Recognition) IV pump check

The 5 Mega pixel camera on the tablet is used to provide an additional check on the medication dosage. The MioCARE A100 includes advanced OCR functionality. A button can be pressed and within 5 seconds the device will start to verify if the setting on the IV pump matches the doctor's order, checking whether the dosing rate and volume are correct.

"The overall satisfaction with the trial run has been very positive. The new system reduced the time spent on the chemotherapy administration process by 81% and 97% of the nurses who were involved said they feel more secure and comfortable using the new system because it reduced mental loading and the possibility of errors."

A quote from the user satisfaction questionnaire of Cathay General Hospital's MioCARE chemotherapy medication



Nurses can access drug information at the bedside.

“Now I can quickly complete the drug check at the bedside, by myself, without the need to find and ask for another nurse to help double-check, this is especially helpful during the night shift.”

A quote from the user satisfaction questionnaire of Cathay General Hospital's MioCARE chemotherapy medication



The Benefits:

Reduced workloads, a streamlined process and improved patient care.

- **81% time saving**

After a 2 months pilot run of the medication administration system in Chemotherapy wards, the results have been promising. The reports from Cathay General Hospital indicate that the new MioCARE medication administration system has reduced the time required for one medication for a patient by 81%, from 24 minutes and 51 seconds to 4 minutes and 46 seconds. The time is saved largely because the new system replaces the repetitive part of the drug administration procedure with an automated procedure, while keeping the medication workflow. The role of second person for the double check is reduced, making the process more efficient.

Countdowns support timing and reduced memory load

Other than the time saving from repetitive tasks the MioCARE medication system reduces the memory load of following multiple different processes for different patients. In feedback the most appreciated feature is the medication timing support reminders which, after each dose is administered, provide a clock countdown to the next dose. An LED and sound alert are provided at the end.

- **Patient education and communication benefitted**

Education of and communication with patients is improved as the medication information is now accessible from the tablet at bedside. Side effect information for each drug is available and a smoother, faster response can be given.

- **Real-time updating of medication records**

The need for real-time entry of the medication administered into the patient record on the hospital server to keep the process flow up to date between shifts removes the need to complete the electronic drug administration records at a later time removing an additional process.

“MioCARE makes me feel worry-free because it provides me with the answers I need and reminds me when to administrate the next drug.”

A quote from the user satisfaction questionnaire of Cathay General Hospital's MioCARE chemotherapy medication



MioCARE use OCR to instantly verify the dosage setting on the IV pump.



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