Evaluation of the limits of automation and impact on drug management at Mohammed V Military Teaching Hospital pharmacy, Rabat, Morocco

MA. El Wartiti[1], W. Enneffah[1], B. Adouani[2], S. Makram[2], N. Cherkaoui[3], A. Bennana[1]
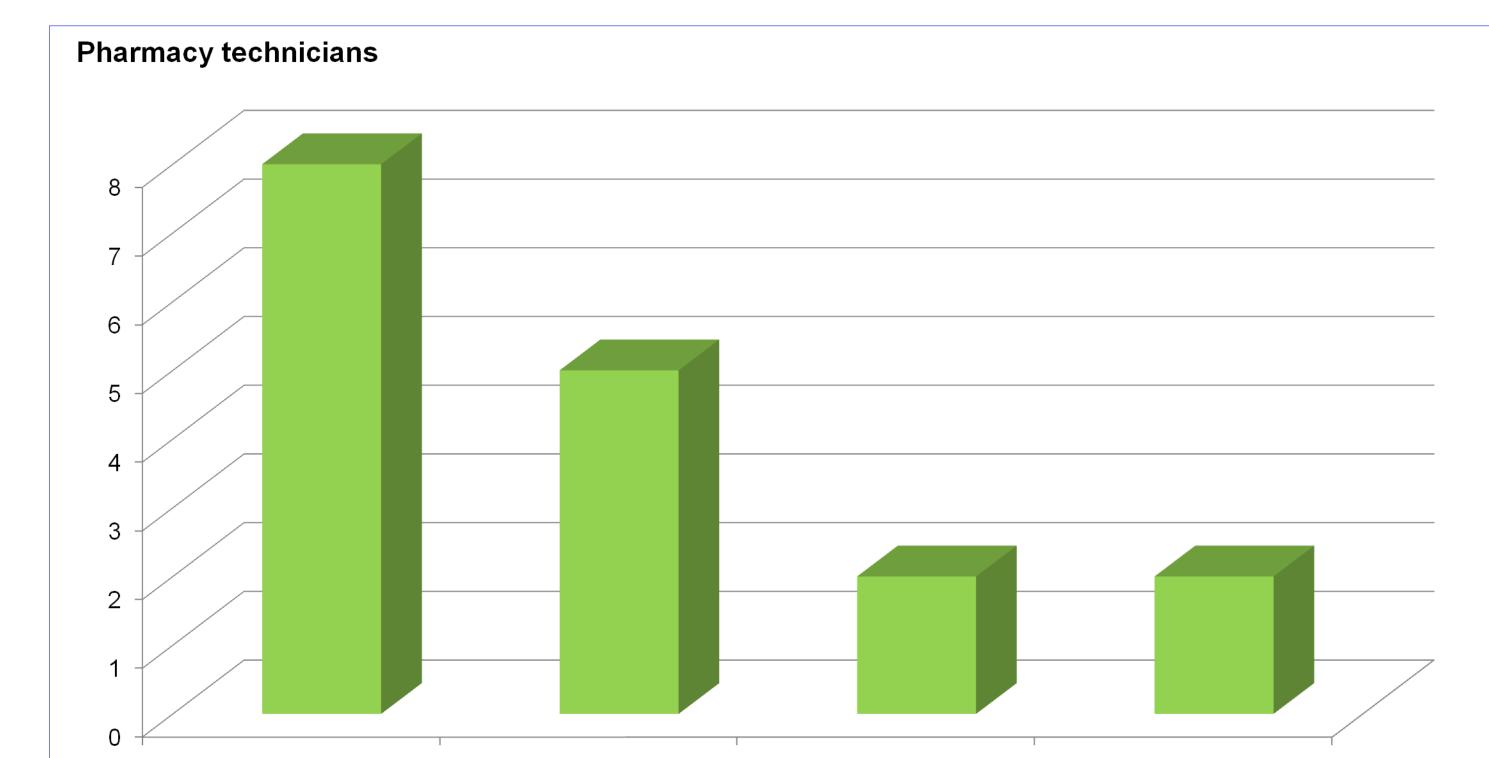
[1]Mohammed V Military Teaching Hospital - Faculty of Medicine and Pharmacy, Clinical Pharmacy - Therapeutic Chemistry, Rabat, Morocco.
[2]Mohammed V Military Teaching Hospital - Faculty of Medicine and Pharmacy, Pharmacy - Pharmacology, Rabat, Morocco.
[3]Mohammed V Military Teaching Hospital - Faculty of Medicine and Pharmacy, Pharmacy - Galenic Pharmacy, Rabat, Morocco.

DSL-013

OBJECTIVES

Nowadays, hospitals tend to automate medicines management to increase quality, efficiency and safety of drug dispensing. At Mohammed V Military Teaching Hospital (MVMTH), a centralized Automated Drug Dispensing System (ADDS) was installed at the duty pharmacy. We expect this experience will be decentralized to all hospital services.

The purpose of our study is to evaluate the impact of automation on the drug management at our duty pharmacy, and then to determine its limits in order to improve them.

METHODS

We analysed the organizational aspects from the database of the ADDS deposited at the MVMTH duty pharmacy. The study lasted one year (2010). We also used a questionnaire completed at the end of the study period by the 12 Pharmacy Technicians (PharmTs) working at our hospital pharmacy (6 juniors with less than 5 years of professional experience and 6 seniors with more than 10 years of professional experience, all performing the same tasks during duty hours), in order to evaluate their view of automation.

RESULTS

Figure 1 : Transactions accomplished (n=6366)

Figure 2 : Transactions accomplished by Pharmacy Technicians (n=5444)

Figure 3 : Drug units consumption by therapeutic classes (n=8864)

Figure 4 : Dispensed drug units by the route of administration (n=8864)

Figure 5 : Analgesics –and anti-inflammatories consumption (n=2269)

Figure 6 : Anti-infective drugs consumption (n=2269)

Figure 7 : Main automation's advanages according to MVMTH pharmacy technicians

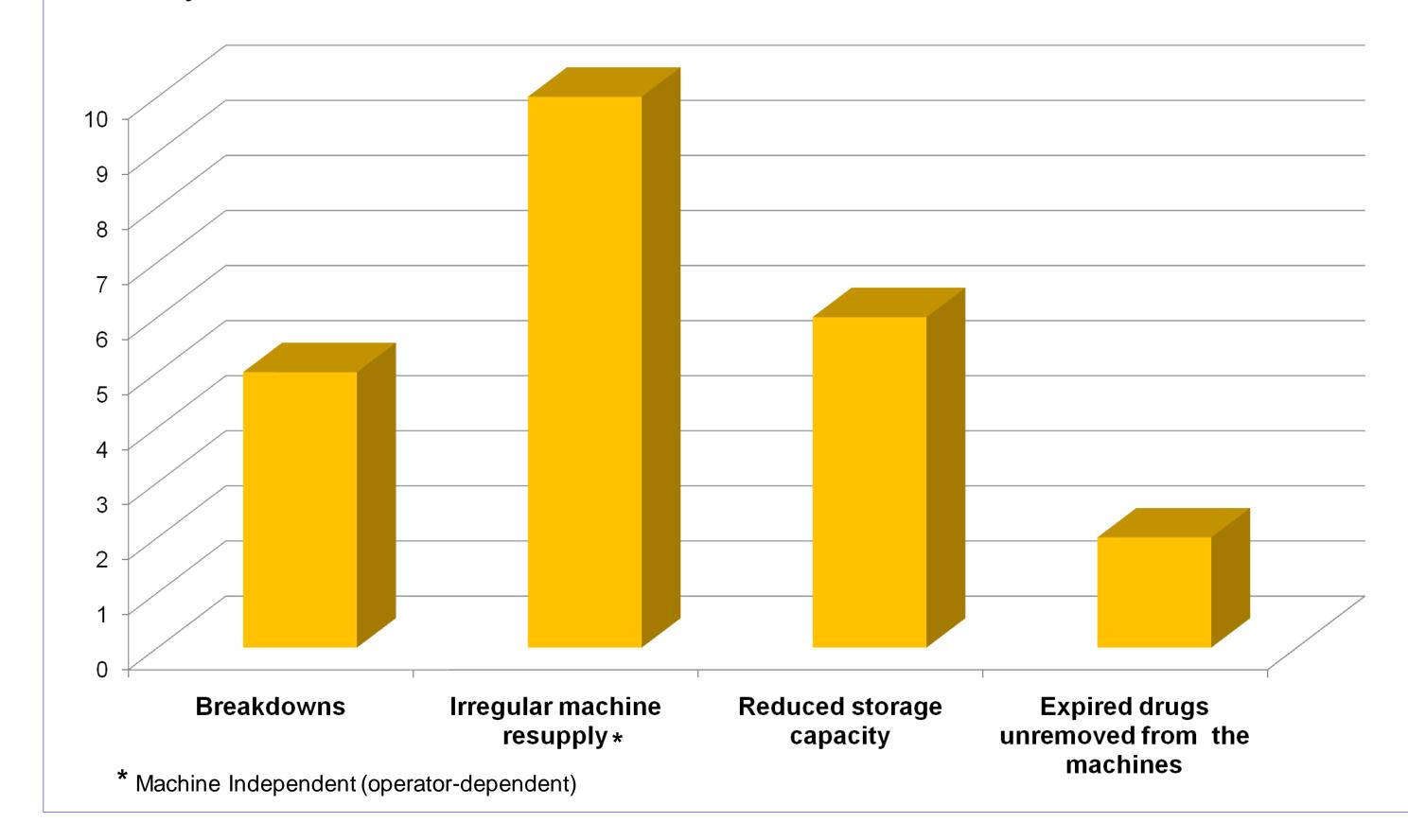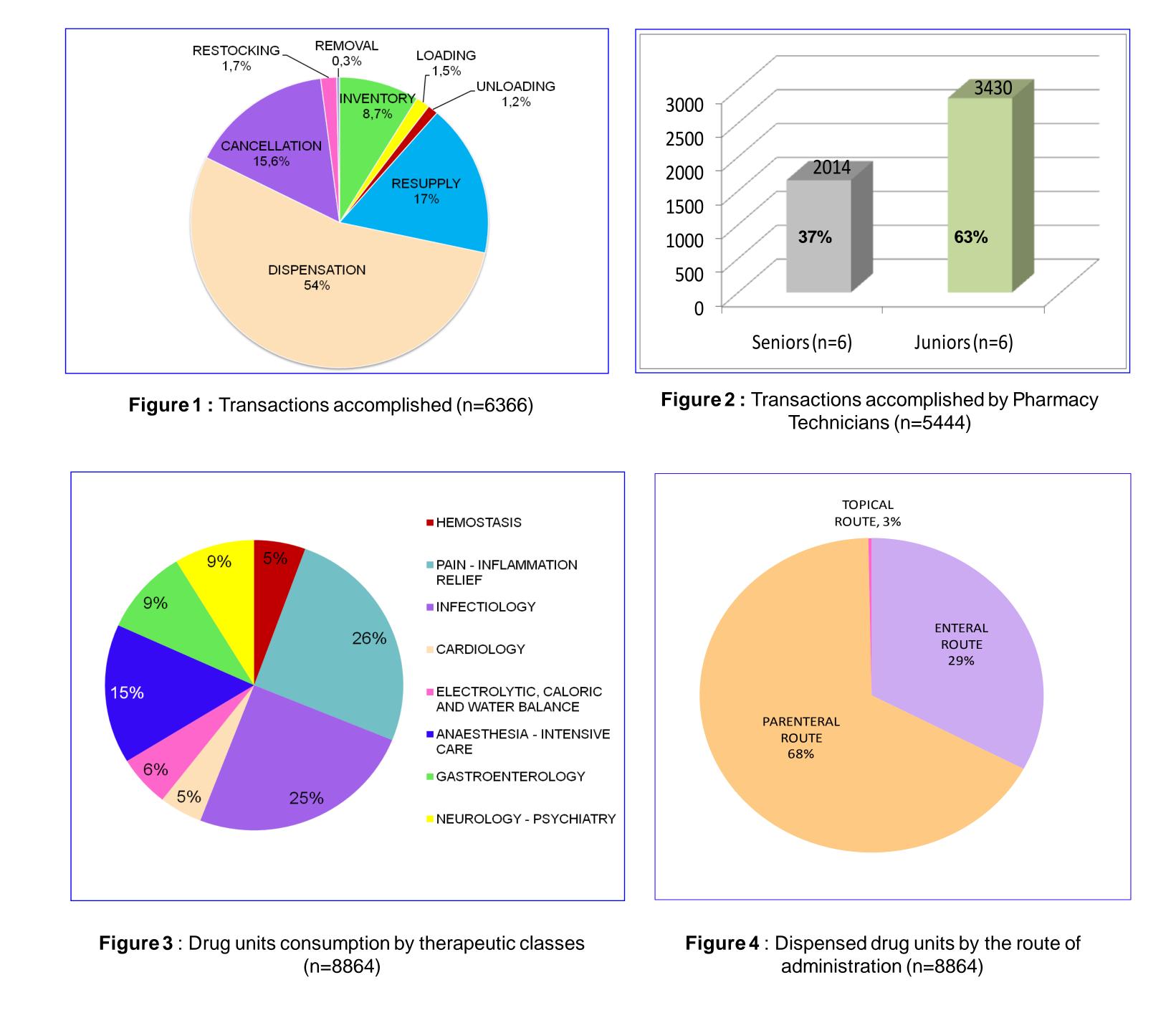* Machine Independent (operator-dependent)

Figure 8 : Main automation's constraints according to MVMTH pharmacy technicians

DISCUSSION

Automated dispensing systems are drug storage devices that electronically dispense medications in a controlled fashion and track medication use. Most systems require user identifiers and passwords, and internal electronic devices track users accessing the system, track the patients for whom medications are administered, and can even provide usage data to the hospital's financial office for the patients' bills.

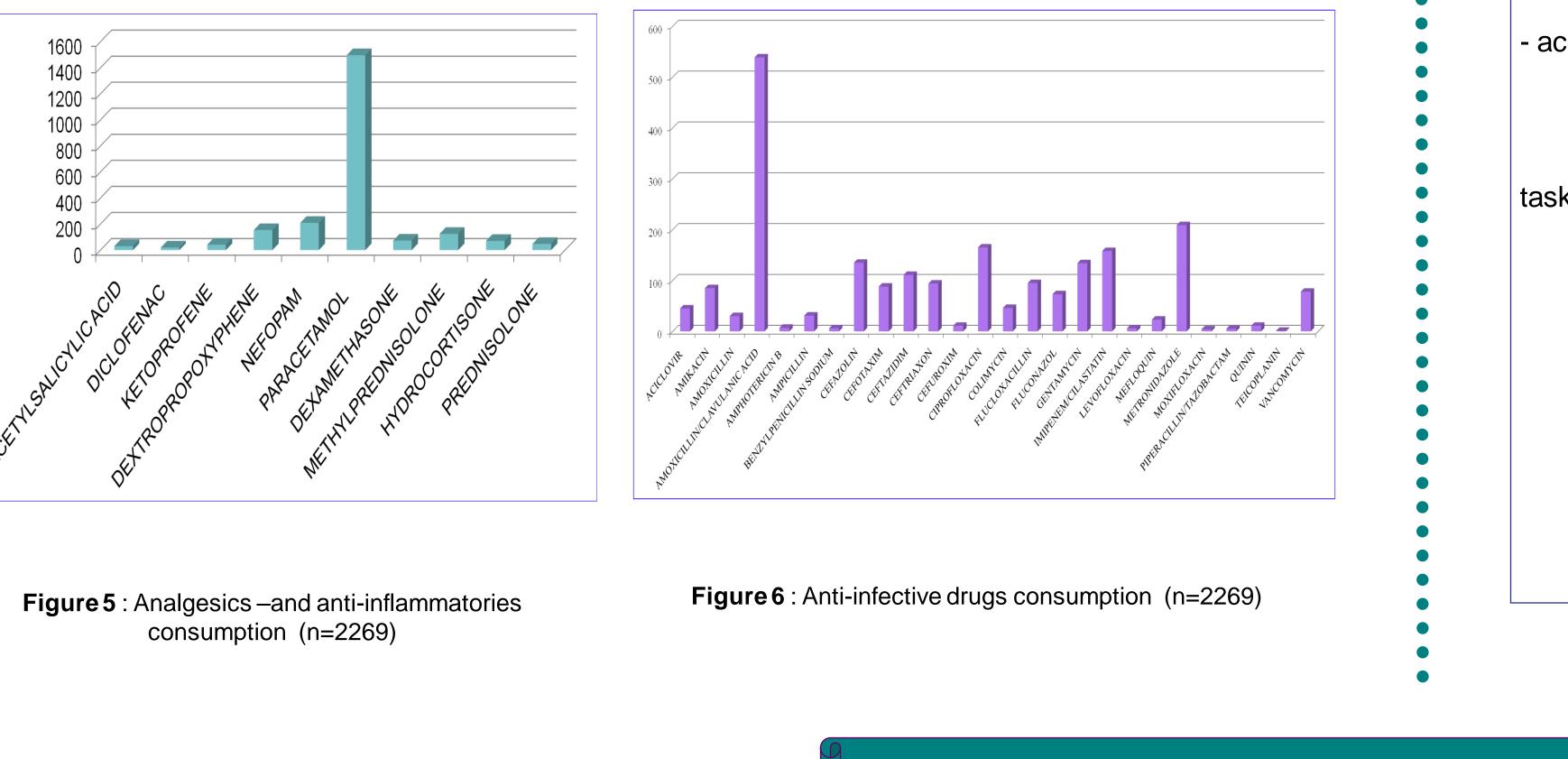Our centralized automation experience allowed us to obtain the following results :

- the category combining anti-inflammatories and analgesics is the most required on duty hours (26%), specially in the injectable form, followed by the anti-infective drugs category (25%). Theses drugs categories are the most needed in emergency and intensive care units, which are known for their considerable drug consumption on duty hours ;

- paracetamol is the most used analgesic, due to its high tolerance, specially for children and pregnant woman ;

- the Amoxicillin/clavulanic acid is the most used antibiotic, due to its high efficiency as a first-line empirical treatment ;

- juniors are more motivated than seniors toward automation, as they did more transactions than the seniors did. This may be due to the fact that juniors are more familiar with technology than seniors ;

- pharmacy technicians accomplished 5444 transaction during the study period. The residual transactions (n=922) were mostly maintenance transactions after mechanical or computer breakdowns. These breakdowns will tend to regress as pharmacy technicians are getting familiar with machine use ;

- according to pharmacy technicians :

• *Main automation advantages are :*

* saving time in locating medicines (≈ 83 minutes saved per week), reallocated to other tasks (inventory, preparation of next day orders…) ;

* limiting personal drug use, as pharmacy technicians must use their fingerprints to access the machine.

• *Main automation constraints are :*

* the irregular machine resupply (poorly done or not done at all) by the technician on duty whose job it is to replenish drugs consumed during the previous day ;

* the reduced capacity for storing all medicines, especially refrigerated and oversized ones.

CONCLUSION

The centralized automated drug dispensing system offers many advantages. However, there are still things to improve concerning machine resupply, storage capacity and storage conditions before decentralization to hospital services. In fact, by decentralizing this solution to cover all hospital services, the main advantage to reach is permitting nurses to obtain medications for inpatients at the point of use, in order to save time and to prevent medication errors.