

# ROBOTIC COMPOUNDING: SAFETY AND PRODUCTIVITY ACHIEVEMENTS IN THE PREPARATION OF HAZARDOUS DRUGS



López-Cabezas C, Marín AM, Riu G, Codina C, Soy D.  
Pharmacy Department. Hospital Clinic Barcelona  
mclopez1@clinic.cat



3PC-058

## OBJECTIVE:

Evaluate the impact on **safety** and **productivity** after the implementation of **Kiro® Oncology** automated device.



## METHODS:

### FMECA:

Failure Mode, Effect and Criticality Analysis to identify risks related to the manual and robotic compounding processes (1-4 scale for Criticality Index (CI), based on severity, occurrence and detection capacity)

### Patient safety:

Percentage of preparations within the  $\pm 5\%$  accuracy range evaluated by gravimetric control in a sample for 9 common drugs prepared manually and using the robotic system

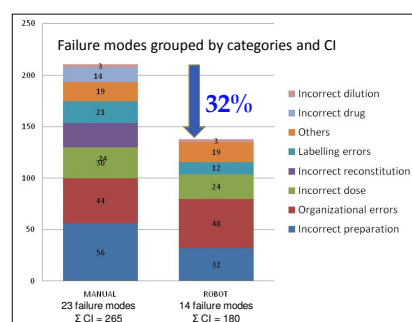
### User safety:

Number of high-volume (>20mL) preparations using 50mL syringes from March to August 2018

### Productivity:

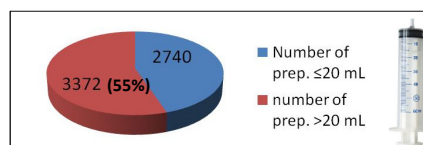
Evolution of production in the robot from May 2017 to August 2018, expressed as mean, minimum and maximum number of preparations per day

## RESULTS:

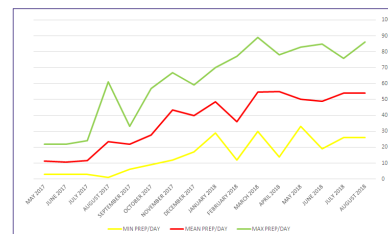


Drug	Manual (CB) (n=1031)	Robot (n=756)	$\chi^2(p)$
Carboplatin	100	96	2.3 (0.13)
Cyclophosphamide	100	95	3.3 (0.07)
Doxorubicin	98,5	93	2.5 (0.11)
Epirubicin	100	100	-
5-Fluorouracyl	100	97	1.35 (0.24)
Gemcitabine	100	100	-
Irinotecan	100	100	-
Oxaliplatin	100	97	1.35 (0.24)
Paclitaxel	100	94	4.3 (<0.05)
Total	99.8%	96.9%	1.11 (0.29)

No significant differences observed



3372 high volume syringes handling avoided in 6 months



At the end of the study period:  
50 prep/day (max 90); 40% total production

## CONCLUSIONS:

i) Robotic compounding is expected to decrease the global risk of failures in the compounding process due to less human intervention in some critical tasks, and to avoid repeated stress injuries related to the use of high-volume syringes. ii) The use of robotic compounding in our setting showed similar accuracy rates to manual compounding. iii) The amount of preparations completed by the robot has gradually increased, and strategies based on technical improvements and optimization of cycle management will be implemented in order to achieve our productivity goals.

