

## Introduction

Our Centralized Cytotoxic Unit (CCU) produces annually over 5029 injectable chemotherapy.

The daily activity is organized around a pharmacist, an intern, a pharmacy technician and a courier.

Preparations are made under isolator.

Throughout the preparation process, errors may occur.



In order to secure the production cycle and to promote continuous training of the team, an error simulation has been created.

## Materials and Methods

- Two sessions were proposed to pharmacists, interns and pharmacy technicians on a voluntary basis. A collection grid and a satisfaction questionnaire were made available to each.
- In order to target each step of the process, 24 errors were installed :
  - Area 1 : Entrance airlock
  - Area 2 : Controlled atmosphere zone
  - Area 3 : Isolator
  - Area 4 : Control area
  - Area 5 : Exit airlock

Type of errors	Gravity
Level 1	Error
Level 2	Serious error
Level 3	Critical error

In terms of gravity, 4 were identified as critical and 5 as serious.

The number of errors was not communicated to the participants before their passage. The individual passage time in the CCU was limited to 30 minutes.

The correction was made individually after each passage with a discussion of the observed errors.

## Results

Gravity	Area 1			Area 2						Area 3						Area 4					Area 5			Note on 24	% errors found	
	Absence of soft soap	Vinyl gloves	Use of jewellery	Bleach spray	Refrigerated product stored at room temperature	Storage error	Incomplete emergency kit	Waste management	Sterilized product with packaging	Wrong solvent	No filter	Luer syringe for subcutaneous injection	Identity monitoring	Flow error	Cisplatin preparation with a Carboplatin residue	Unclamped infusion bag	No purge of the connector	Infusion bag without active substance	Intrathecal syringe with Vincristine	Wrong solvent	Wrong drug	Wrong destination	Absence of back labels			Connector heat sealed to the plastic bag
Level 1	Level 1	Level 1	Level 1	Level 1	Level 1	Level 1	Level 1	Level 1	Level 1	Level 1	Level 1	Level 1	Level 2	Level 2	Level 2	Level 1	Level 1	Level 3	Level 3	Level 3	Level 3	Level 1	Level 2	Level 2		
Player 1	0	1	0	1	0	0	0	0	1	1	1	1	1	1	1	0	0	1	1	1	1	0	1	0	14	58,30%
Player 2	1	1	1	1	0	0	0	1	0	0	0	0	1	0	1	1	0	0	0	0	1	0	0	0	9	37,50%
Player 3	1	1	0	0	0	0	1	1	1	0	1	1	0	1	0	1	1	1	1	1	1	1	0	1	16	66,67%
Player 4	1	1	1	1	1	1	1	1	1	0	1	1	0	1	0	0	0	1	1	1	1	1	0	0	18	75%
Player 5	1	1	0	1	1	1	1	1	1	0	1	1	1	1	1	0	0	1	1	1	0	0	1	0	17	70,83%
Player 6	1	1	0	1	0	0	1	0	1	0	1	0	1	1	1	1	1	1	1	1	1	0	1	1	17	70,83%
Detection rate (%)	83 %	100 %	33 %	83 %	33 %	33 %	67 %	67 %	83 %	17 %	83 %	67 %	100 %	50 %	100 %	33 %	33 %	83 %	83 %	83 %	83 %	33 %	50 %	33 %		

Two pharmacists, one intern, and the three referent technician's participated to this experience.

The results can be found in the table above. If the error has been detected, the participant gets 1 point, if it has not been detected, the participant gets 0 points.



The average passage time was 28 min.

This exercise has been well appreciated by all.

## Discussion

No participant could identify all the errors. Only 3 errors were identified by all participants.

→ No critical errors were detected by all participants.

→ Errors concerning personal protection were very well detected by the participants.

→ On the control area, 4 out of 6 participants didn't check that the infusion bag connector was clamped and purged. This omission is surprising because the check-list recalls the necessity of this verification before the infusion bag delivery.

→ During the debriefing, it became apparent that some errors were clearly identified by all, but some participants were not able to explain why they were an error. For example, 5 participants knew that the presence of bleach spray in the area 2 was a mistake, but only 2 participants knew the reason.



## Conclusion

The participants appreciated :



- the rapidity of the game
- the playful side
- the complete coverage of the process



- The simulation enables the participants to reflect upon themselves and their actions in order to improve moving forward.
- However, it was suggested that a collective correction would be more beneficial.



In conclusion, this exercise could be kept in our unit for the training of the future interns and pharmacy technicians.

