

# Pre-post study of interruptions in a pharmacy department

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## Objectives

1. To compare the number of stimuli per hour received and emitted for pharmacists and pharmacy technicians between 2010 and 2012

2. To evaluate the impact of four corrective measures

## Methods

### Design

Pre-post cross-sectional observational study

### Setting

The main dispensing zone of the pharmacy department is composed of three data entry stations, each with one pharmacist and one pharmacy technician

### Pilot phase

A two-hour pilot phase was conducted to identify all types of stimuli

Stimuli were characterized as systematically causing\* or not systematically causing an interruption

(1) general calls through the main hospital speaker system, (2) other people's conversations in the zone, (3) printer/fax noise, (4) pneumatic tube system noise, (5) hand-dryer noise, (6) other people's phones ringing, (7) other people answering the phone, (8) comings and goings, (9\*) fire alarms, (10\*) Web browsing (Facebook®, etc.), (11\*) packing machine alerts, (12\*) technical problems, (13\*) colleagues' questions, (14\*) people at the reception wicket, (15\*) information searches for prescription entry/validation, (16\*) prescription entry issues to resolve, (17\*) task changes, (18\*) observed subject's phone ringing, (19\*) answers given to colleagues, and (20\*) miscellaneous, including head movements

Stimuli received by the subject

(21) phone call transfers, (22) talking to oneself, (23\*) face-to-face non-professional conversations, (24\*) face-to-face professional conversations, and (25\*) miscellaneous, including interactions with people

Stimuli emitted by the subject

### Observational phase

The pre-phase study was carried out between August 17, 2010 and September 2, 2010.

The post-phase study was conducted between June 19, 2012 and June 29, 2012.

## Results

**Table 1. Stimuli received and emitted that systematically cause an interruption or not**

Stimuli	Pharmacists		p	Pharmacy technicians		p
	Mean rate of stimuli per hour ± Standard deviation (proportion of type of stimuli vs total)			Mean rate of stimuli per hour ± Standard deviation (proportion of type of stimuli vs total)		
	2010	2012		2010	2012	
Stimuli received that did not systematically cause interruptions	55.8±19.9 (63%)	51.3±15.5 (64%)	0.22	61.3±20.6 (74%)	53.3±13.6 (69%)	0.08
Stimuli received that systematically caused interruptions	18.6±5.9 (21%)	16.8±8.3 (21%)	0.2	13.7±6.5 (16%)	13.7±5.8 (18%)	0.48
Stimuli emitted that did not systematically cause interruptions	4.2±3.9 (5%)	2.9±4.1 (4%)	0.16	1.9±2.4 (2%)	2.9±2.9 (4%)	0.11
Stimuli emitted that systematically caused interruptions	10.2±6.3 (11%)	8.7±3.5 (11%)	0,19	6.0±4.7 (8%)	7.3±3.6 (9%)	0.16
Total	88.8 (100%)	79.7 (100%)	0.11	83.0 (100%)	77.4 (100%)	0.18

**Table 2. Profile of four stimuli received and emitted related to corrective measures**

Stimuli	Pharmacists		p	Pharmacy technicians		p
	Mean rate of stimuli per hour ± Standard deviation			Mean rate of stimuli per hour ± Standard deviation		
	2010	2012		2010	2012	
Comings and goings	5.7±4.3	13.2±5.9	<0.001	5.4±3.9	13.7±5.7	<0.001
Face-to-face non-professional conversations	4.4±4.2	1.2±1.8	0.003	2.6±2.5	1.7±1.6	0.11
Printer/fax noises	3.7±2.4	0.6±1.8	<0.001	4.7±3.2	0.75±1.8	<0.001
Web browsing	1.3±2.2	0±0	0.009	0.6±1.3	0.1±0.5	0.07

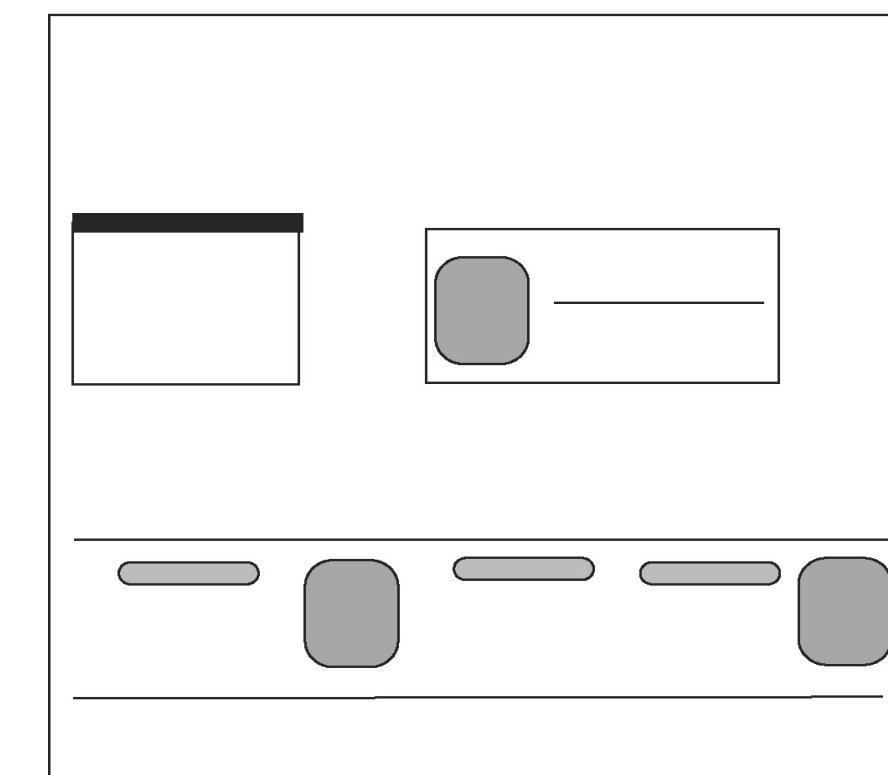
## Corrective measures

Reorganization of the dispensing area

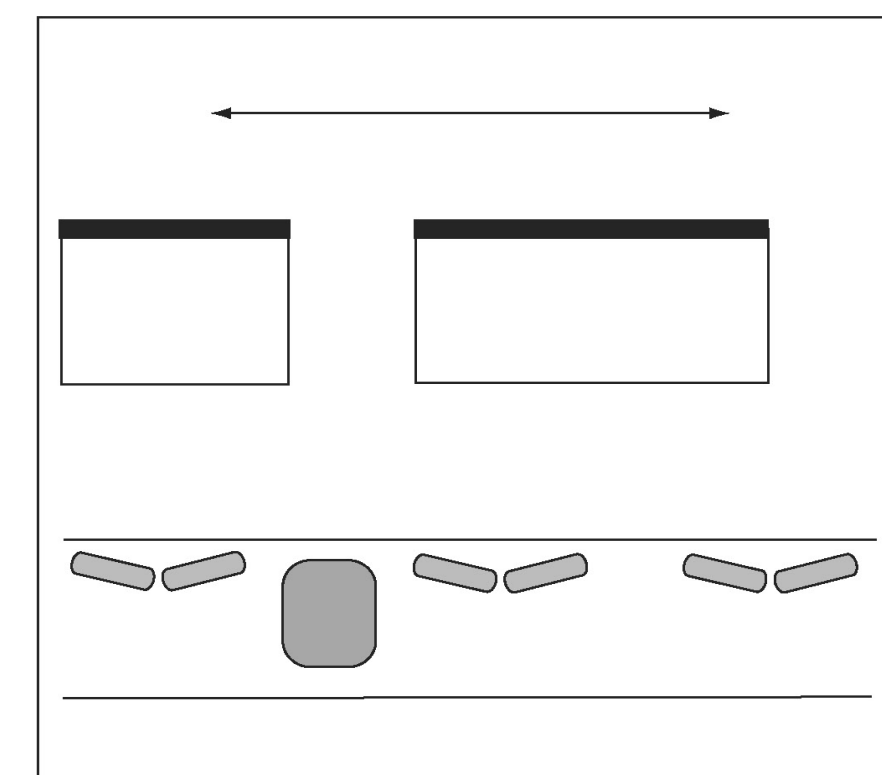
2 printer/fax machines were replaced with a digital fax server with a double screen installation

Browsing social media sites was prohibited

Before



After



Reminders were given about limiting non professional discussion



## Discussion / Conclusion

Despite the corrective measures, there was no statistically significant difference between the rates of stimuli per hour observed in 2010 and 2012

Other studies are needed to identify more efficient corrective measures and to better describe the nature and the impact of stimuli, distractions and interruptions in pharmacy practice