



# Environmental Cleaning Project Makassed General Hospital

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## BACKGROUND

The environment is becoming important as a source for Healthcare Acquired Infections especially with nosocomial pathogens like *Acinetobacter spp.*, *C. diff.*, *MRSA* & *Rotavirus*. The immediate environment of the patient can become easily colonized with the patient's flora. This can become the source of infection for the following patient occupying the room.

In 2011-2012 we had an outbreak of hospital acquired rotavirus in the pediatric department. After investigation of 12 cases, contamination from the environment was a likely source.

Several measures were started that included monitoring of hand hygiene adherence, contact isolation of pediatric patients hospitalized with diarrhea and enhancement of environmental cleaning.

As part of these activities, we started a project to assure cleanliness of the highly touched surfaces.

## MATERIALS and METHODS

The project was started with the application of a fluorescent powder on 10 of 14 validated highly touched surfaces in the patient room:

1. Tray table
2. Bed side table
3. Call box
4. Telephone
5. Sink
6. Toilet seat
7. Flush handle
8. Bathroom door knob
9. Bathroom switch light
10. Room door knob

The material was provided by EcoLab- Lebanon.



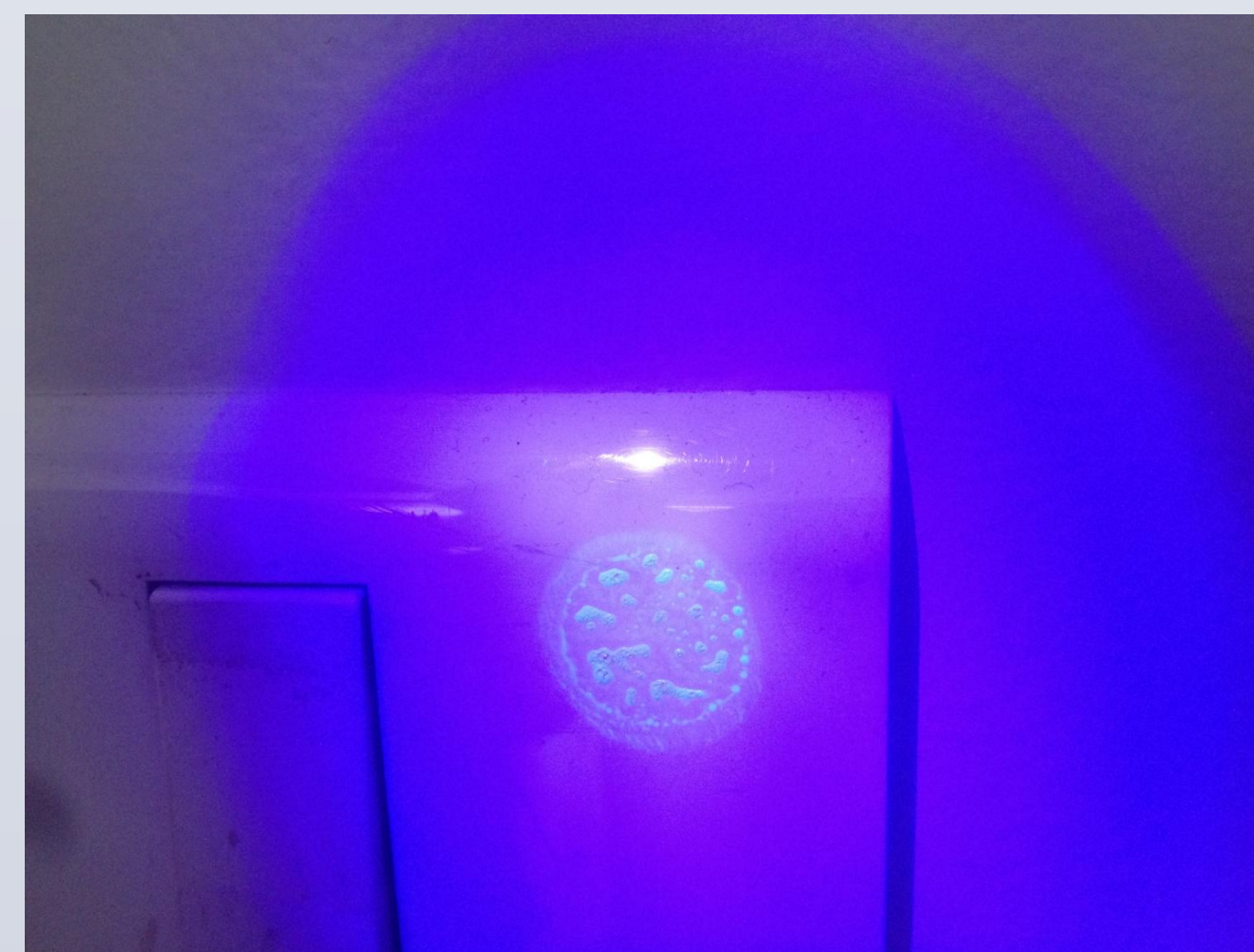
On a second phase, we contacted Dr Philip Carling who pioneered successfully the use of a stable but easily removed liquid transparent fluorescent solution called Dazo, not detected by the trained eye as the powder solution.

The material was shipped to us by EcoLab USA.



The solution was applied on highly touched surfaces and checked after terminal cleaning for removal by UV light.

Partially cleaned surfaces are considered clean.



A training based on the findings was provided for the environmental staff.

Statistical analysis was performed using two-tailed chi square test.

## RESULTS

A total of four audits were done between April 2012 and July 2013.

Two interventions were done after the first and the third audit.

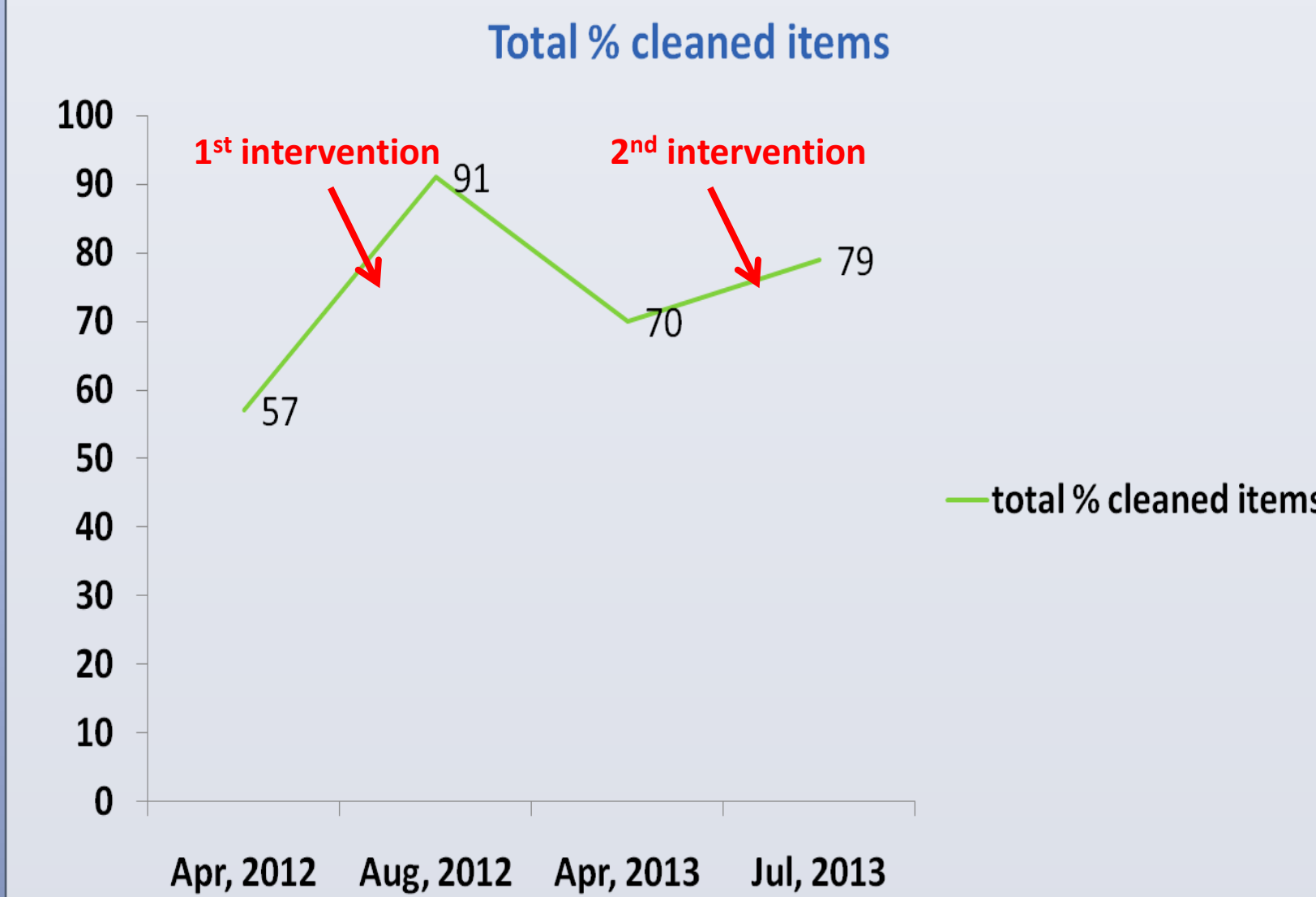


Figure 1- Total % cleaned items

Initial audit showed an average cleaning of 58% with improvement after each intervention, but also with decrease compliance over time.

p value <0.001 between the first and the second audit;  
p value = 0.04 between the third and the fourth audit.

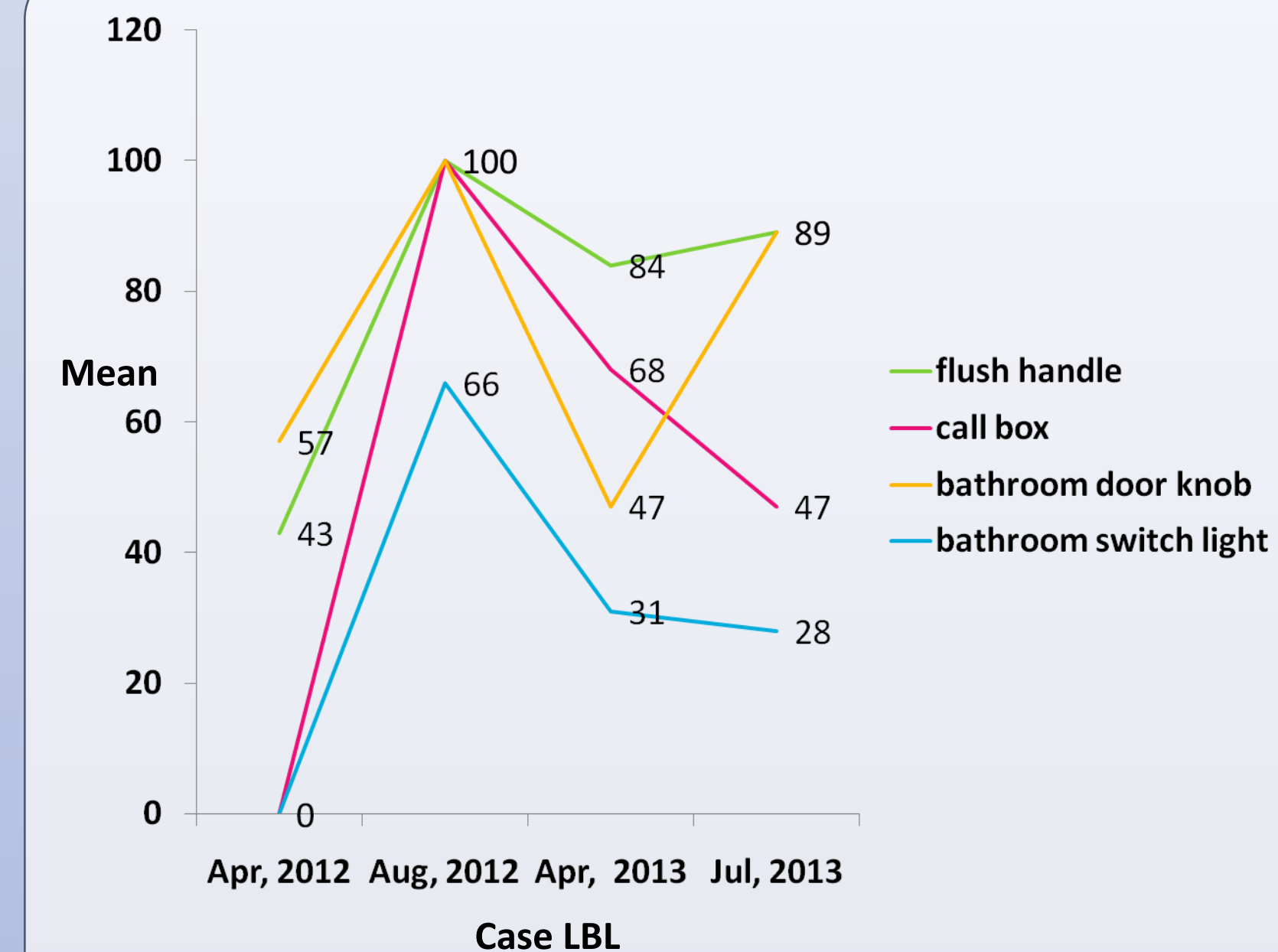


Figure 2- % cleanliness of the most commonly missed items

The items commonly missed are frequently touched small objects:

1. Flush handle;
2. Call box;
3. Bathroom door knob;
4. Bathroom switch light

Sample size	7 Rooms	9 Rooms	20 Rooms	19 Rooms
Audit Date	April, 2012	August, 2012	April, 2013	July, 2013
Sink	85.7	100	90	100
Tray table	83.3	100	76	100
Toilet seat	85.7	88	89	88.9
Flush handle	42.9	100	84	88.9
Bedside table	85.7	88	71	89.5
Side rails	57.2	88	71	84.2
Call box	0	100	68	47
Telephone	75	85	76	70.6
Bathroom door knob	57.1	100	47	88.9
Bathroom switch light	0	66	31	27.8

Table 1- Percentage cleaning of all items

## DISCUSSION

Monitoring adequate cleaning is important to assure compliance and to prevent cross infection and hospital acquired outbreaks.

Highly touched small surfaces are not thoroughly cleaned and can become a source for bacterial reservoir.

Using Dazo solution and periodic interventions have shown in multiple studies to lead to process improvement.

In this small sample, where Dazo solution was used for the first time in our region, we have shown an improvement in cleaning that need to be sustained with continuous interventions.

After the multifaceted interventions, the *Rotavirus* outbreak subsided. Improved cleaned might had an important role.

## REFERENCES

1. Carling PC, Parry M, Von Beheren SM et al. Identifying opportunities to enhance environmental cleaning in 23 acute care hospitals. *Infection Control & Hospital Epidemiology* 2008; 29:1-7.
2. Carling PC, Parry M, Rupp ME et al. Improving cleaning of the environment surrounding patients in 36 acute care hospitals. *Infection Control & Hospital Epidemiology* 2008; 29:1035-41.
3. Carling PC, Parry M, Bruno-Murtha LA et al. Improving environmental hygiene in 27 intensive care units to decrease multidrug-resistant bacterial transmission. *Crit Care Med* 2010; 38:1054-59.