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.

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

\[ p \text{ value} < 0.001 \text{ between the first and the second audit; } p \text{ value} = 0.04 \text{ between the third and the fourth audit.} \]

**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.

<table>
<thead>
<tr>
<th>Audit Date</th>
<th>April, 2012</th>
<th>August, 2012</th>
<th>April, 2013</th>
<th>July, 2013</th>
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<tbody>
<tr>
<td>Sink</td>
<td>90.7</td>
<td>90</td>
<td>90</td>
<td>90</td>
</tr>
<tr>
<td>Tray table</td>
<td>85.7</td>
<td>85</td>
<td>85</td>
<td>85</td>
</tr>
<tr>
<td>Toilet seat</td>
<td>85.7</td>
<td>85</td>
<td>85</td>
<td>85</td>
</tr>
<tr>
<td>Bathroom door knob</td>
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<td>85</td>
<td>85</td>
<td>85</td>
</tr>
<tr>
<td>Bathroom switch light</td>
<td>57.2</td>
<td>85</td>
<td>71</td>
<td>85.2</td>
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<tr>
<td>Catches</td>
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<td>100</td>
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<td>47</td>
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<td>Telephone</td>
<td>85</td>
<td>100</td>
<td>75</td>
<td>75.6</td>
</tr>
</tbody>
</table>

**Figure 1**: Total % cleaned items

**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

**Table 1**: Percentage cleaning of all items

**REFERENCES**


**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 cleaning might have an important role.

**BACKGROUND**

The environment is becoming important as a source for Healthcare Acquired Infections especially with nosocomial pathogens like Acinetobacter spp., C. difficile, 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 ensure cleanliness of the highly touched surfaces.

**MATERIALS and METHODS**


The material was provided by EcoLab- Lebanon.