



# Improving hand hygiene compliance by making hand rub dispensers more visible

Placement of alcohol-based hand rub dispensers near the patient bed and visible to the caregiver can increase the number of hand disinfections.

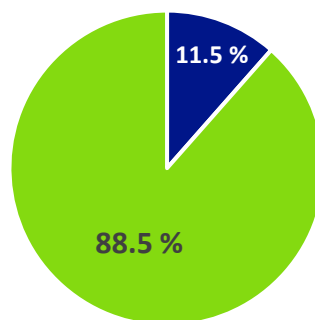
A simulation study

## STUDY RESULTS

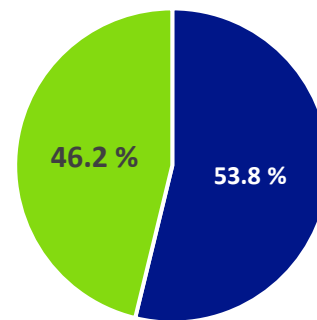
### Proportion of hand disinfections depending on dispenser location

When the hand rub dispenser is located near the patient bed, physicians performed significantly more hand disinfections prior to patient contact ( $p=0.0011$ ).

Hand rub dispenser located near the door



Hand rub dispenser located near the patient bed



■ Hand disinfection  
■ No hand disinfection

## STUDY DESIGN

Simulation study with 52 volunteer physicians



26 in room setting 1  
26 in room setting 2

## INTERVENTIONS



A realistic replica of one patient room was constructed.



An alcohol-based hand rub dispenser was mounted in one of two locations:

1. Directly next to the patient in clear view when facing the patient
2. Near the door and hidden from the healthcare provider when facing the patient

## MEASUREMENTS

Measurements during intervention phase



Observation of hand hygiene upon patient contact during a simulated patient visit



Data collection by two observers: the standardised patient and a second observer outside the room



Research for  
infection protection



## BACKGROUND

Mock-ups and simulations are common methods to improve design, as has been done for airplanes or cars in the past. Also in hospitals, simulations can be a useful measure, as there is a link between patient safety and design solutions.

## GOAL

The main objective of the study was to test whether the correlation between healthcare processes and structural conditions in a hospital can be tested in advance with the help of a patient room model. Availability of alcohol-based hand rub dispensers served as a realistic parameter affecting patient safety.

## DESIGN AND METHODS

Using plans from a leading US architectural firm for a new university hospital, a model of a patient room was built on the medical campus. In this patient room, a 1-litre alcohol-based hand rub dispenser was placed in two different locations:

1. Next to the patient's bed, clearly visible for healthcare personnel when facing the patient
2. Next to the door and thus hidden for healthcare personnel when facing the patient

The primary outcome was the hand hygiene upon patient contact.

52 volunteer physicians were instructed to examine a standardised patient. The doctors were randomly assigned to one of two groups:

- Group 1 examined the patient with the dispenser in location 1.
- Group 2 examined the patient with the dispenser in location 2.

The observation of hand hygiene compliance and the data collection were carried out by two persons each:

1. By the standardised patient
2. By a second person who observed the situation through the window of the patient's room model.

## RESULTS

52 volunteer physicians took part in the study. Each study group consisted of 26 doctors. There was a statistically significant difference ( $p=0.0011$ ) between the two groups. In group 1, 14 (53.8%) of the doctors disinfected their hands before patient contact, while in group 2 only 3 (11.5%) of the doctors used the alcohol-based hand rub before patient contact.

According to these results, the architectural plans were modified and the sinks were strategically located in direct view of the healthcare workers.

## CONCLUSION

Testing of mock-ups of proposed architecture of patient rooms can help to improve structural designs of hospitals and in the following to avoid failure in patient care and therefore to improve patient safety – for example by locating alcohol-based hand rub dispensers clearly visible near the patient bed.