

Evaluation of Hand Hygiene training and Hand Washing Efficiency with ATP Bioluminescence Assay

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AIM

1. To use ATP test as a training tool to demonstrate the effectiveness of good hand-washing technique.
2. To use ATP test as a monitoring tool to measure the efficacy of hand washing by swabbing clean hands immediately after washing (*before hands come into contact with anything*).

BACK GROUND

Hand Hygiene monitoring based on ATP (adenosine triphosphate) bioluminescence is a simple method that can be used as part of a hand-washing-monitoring and training program. With an ATP system, results are obtained in real time, providing on-the-spot feedback during training or as part of a random monitoring program. By scientifically measuring ATP, staff can easily see that with proper hand washing, lower ATP levels can be obtained, thus reducing the potential spread of unwanted organisms or germs.

ATP is the universal energy molecule found in all organic material. This includes organisms, bodily fluids and food residues. The combination of ATP with the enzyme luciferase produces light that can be measured in a luminometer. The amount of light is proportional to the amount of ATP and is expressed in Relative Light Units (RLUs). The greater the level of ATP, the higher the RLU value, the dirtier the hand

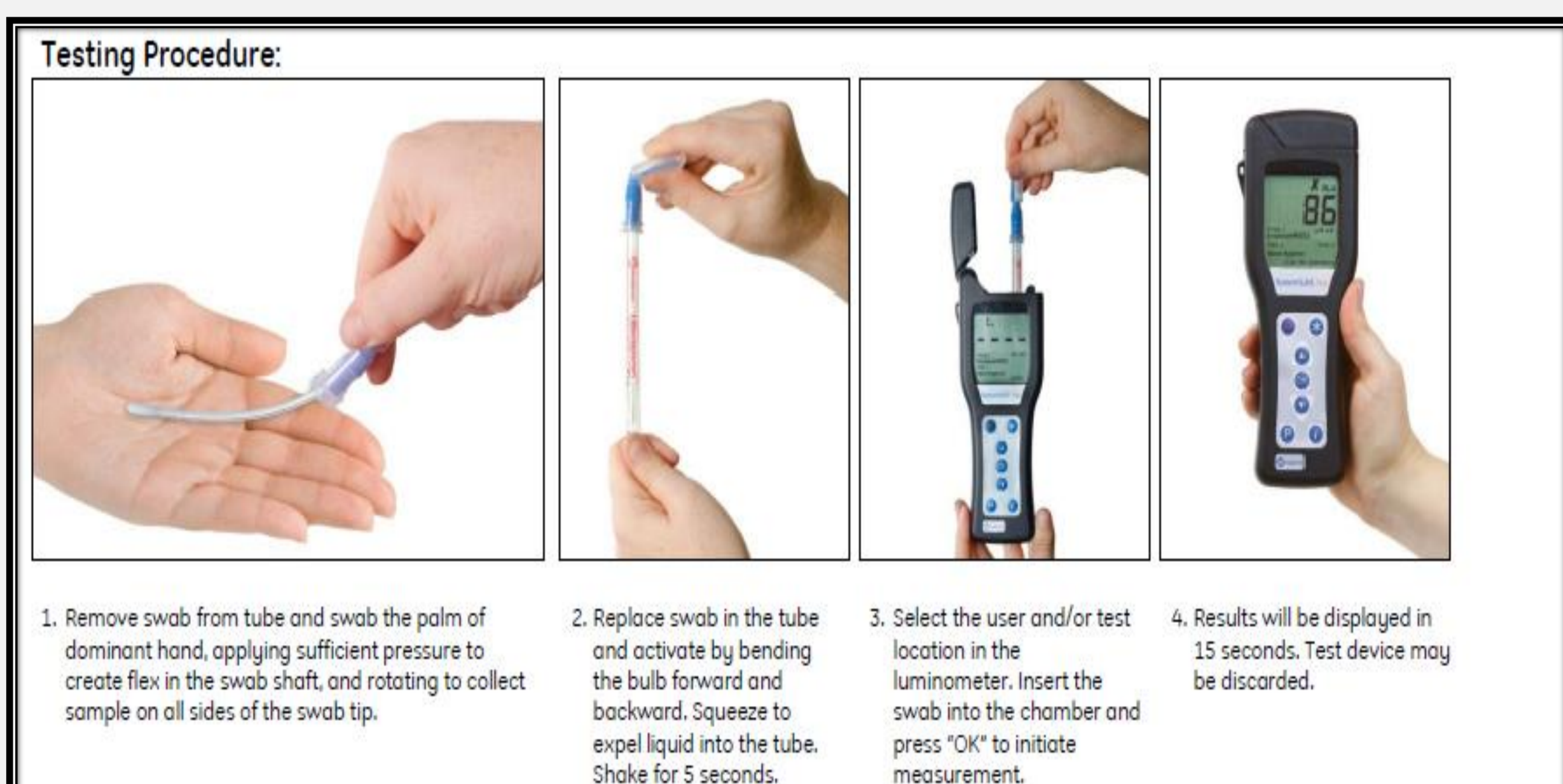
STUDY DESIGN

The study was done for a duration of 9 months (June 2019- March 2020) in Fortis Escorts Heart Institute.

112 healthcare workers were included in the study. Before hand-washing, the palm of the dominant hand was swabbed using the UltraSnap™ ATP detection devices and measured with the SystemSURE Plus luminometer. HCWs then washed their hands according to hospital protocol for approximately 60 seconds and dried with a single-use paper towel. The palm of the dominant hand was again swabbed and measured

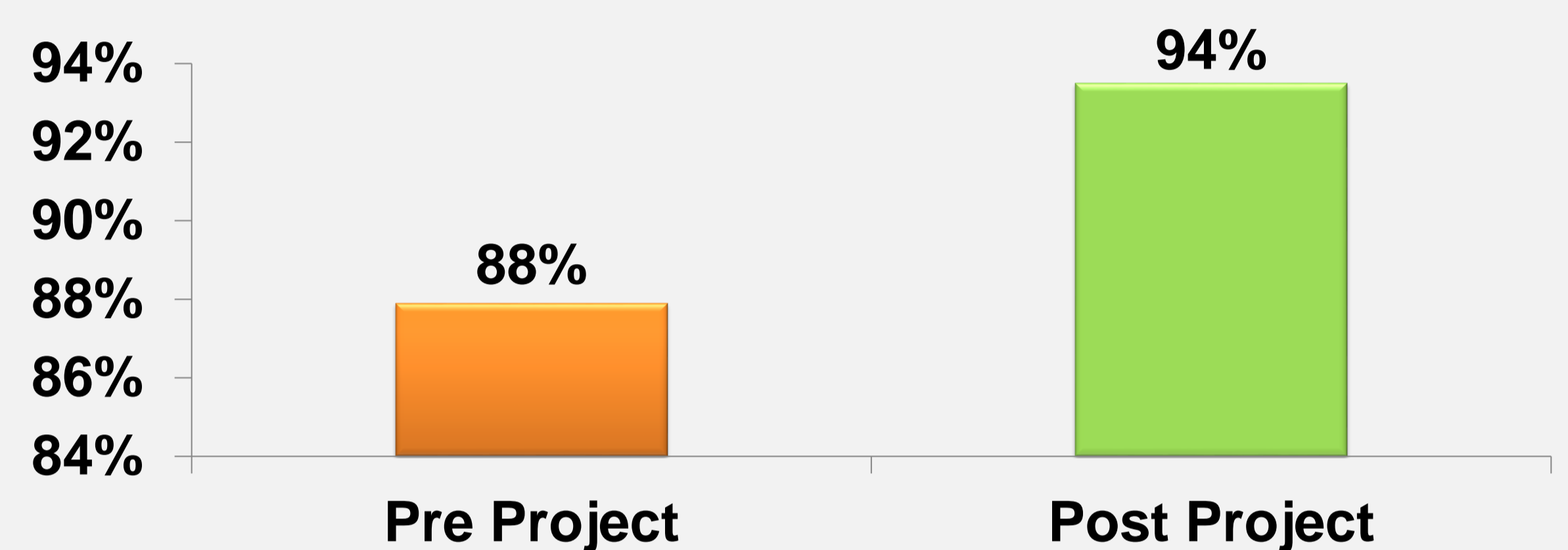
A Pass/Fail limit of 60 RLU was used. If the result was higher than 60 RLU, the HCW was asked to rewash his/her hands for retesting

- For daily routine monitoring or random monitoring, setting a single Pass/Fail limit of 60 RLU would only require a single swabbing device per employee.
- Data suggests that an 80% average reduction in ATP levels is achievable following effective hand washing. Measuring this improvement requires two samples, one before and one after cleaning



RESULT

- Of the 112 healthcare workers, 94 were nurses, 12 were doctors and 6 were technicians.
- After hand washing, 80% reduction was achieved in 78.6% of the HCWs. In rest of the HCWs (21.4%), hands were rewashed after demonstration of correct hand hygiene technique and retesting was done.



DISCUSSION

During our hand hygiene surveillance, we have observed an increase in awareness about the proper hand hygiene technique. The hand hygiene compliance (based on WHO 5 moments) has increased during the study period.

The compliance of hand hygiene is monitored on WHO five moments basis, we wanted to use this quantitative real time rapid tool to teach the proper technique of hand hygiene to the staff.

On the occasion of Handwashing day we did the exercise with patient's relatives also as a part of health education and the best infection prevention measure after their discharge. Random sample from the hands taken and the test performed, based on the RLU values those who failed was given a demonstrated session on Hand washing steps, and second sample was assed to let them understand the difference between proper handwashing with 6 steps and a normal hand washing.

CONCLUSION

Stop raising awareness, make them conscious for better understanding thus to improve the effectiveness!

Hand hygiene is the most important step in prevention of spread of infections. We have been imparting training on hand hygiene in the hospital. But with the help of this real time rapid test, we have been able to show our colleagues that if we follow the correct hand hygiene technique, we can reduce the bioburden on our hands, which in-turn leads to prevention of infections.

