

# An Innovative Method to Increase Compliance of Personal Protective Equipment in Healthcare Personnel

Rishika Sharma MD<sup>1</sup>, Sarah Al-Obaydi MPH MD<sup>1</sup>, Idrees Suliman MD<sup>1</sup>, Robin Roach MS BSN RN CIS<sup>2</sup>, Kenyatta Badgett MPH<sup>2</sup>, Nemer Dabage MD FACP<sup>1</sup>, Alan Harmatz MD<sup>3</sup>

<sup>1</sup> Blake Medical Center Internal Medicine Residency <sup>2</sup> Infection Control Blake Medical Center <sup>3</sup> Chief Medical Officer Blake Medical Center



## Background

Healthcare-associated infections (HAIs) are a continuing threat to the safety of patients. Personal protective equipment (PPE) is one such preventive measure that reduces the spread of infection in healthcare facilities. Both adherence to PPE utilization and correct technique by Healthcare Workers (HCW) in the hospital setting is lacking. One recent study in a tertiary hospital setting found that appropriate PPE use overall was 34%<sup>1</sup>. A different study found that even when used that it is often donned and doffed incorrectly (50% and 67% incorrectly, respectively)<sup>2</sup>. Non-adherence and incorrect use of PPE could result in the transmission of infectious organisms. We designed a Quality Improvement project to evaluate and improve both adherence and correct usage of PPE use at Blake Medical Center.

## Purpose and Aim

The aim of this project is to enhance both the adherence and correct usage of PPE to a statistically significant degree with an eventual goal of 100% on both fronts.

## Methods

HCW were observed covertly on their compliance with hand hygiene and wearing PPE, such as gowns, gloves, masks etc. while entering and exiting isolation rooms. Pre-intervention surveys based on a previously utilized PPE and isolation questionnaire<sup>3</sup> that evaluated correct donning and doffing PPE was then administered to HCW (Figure 1). Our intervention phase was a 2-minute PowToon (animated video presentation) that explained the phases of donning and doffing PPE. The PowToon was created using information available from the Centers of Disease Control<sup>4</sup> (Figure 2). This was transmitted to all HCW through Monday Minute Emails, discussed in morning reports/noon conferences, and shared during the nursing huddle meetings. Post-intervention observations of PPE adherence and repeat surveys were performed. Available data was analyzed and p values calculated using a two tailed t test via Excel.

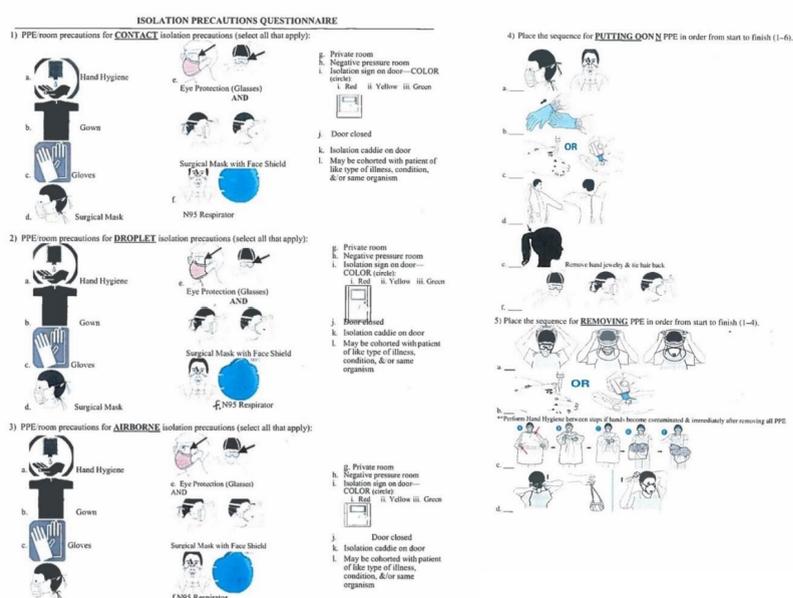


Figure 1: PPE Questionnaire

## What is the Correct Sequence to Don On PPE?



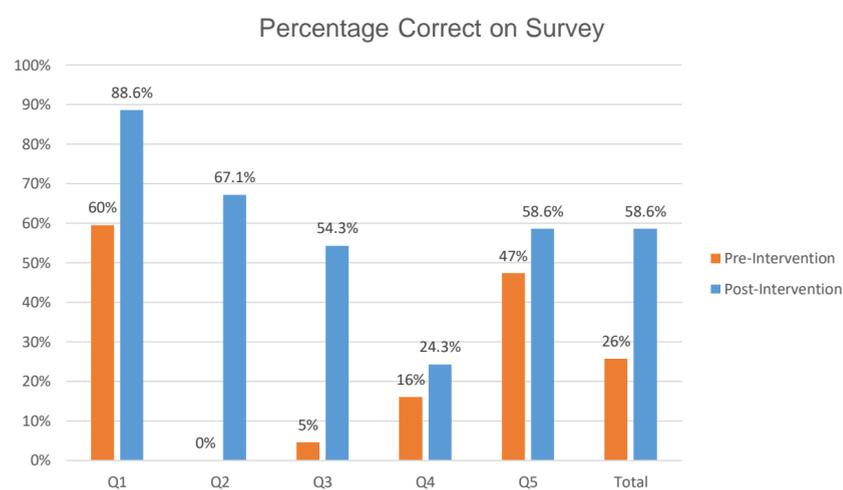
Figure 2: PowToon Screen Shot

## Results

130 pre-intervention and 70 post-intervention surveys were obtained. Data on percentage correct pre and post test are present in table 1. 51 PPE covert observation pre-intervention and 31 post-intervention were recorded. Data regarding observance of PPE pre and post intervention are presented in table 2. Although there was an increase in all the questions answered correctly post intervention, there was a statistical difference in the specific questions, Q1, Q2, Q3 and the overall total number of questions answered correctly. There was also a statistical significance in the change in observed PPE utilization when entering and exiting isolation precaution patient rooms.

Questions	Pre-Intervention % (n=130)	Post-Intervention % (n=70)	Change in Percentage (%)	p-value
1	60.0	86.6	+26.6	1.3e <sup>-6</sup>
2	0.0	67.1	+67.1	2.4e <sup>-18</sup>
3	5.0	54.3	+49.3	1.0e <sup>-11</sup>
4	16.0	24.3	+8.3	0.16
5	47.0	58.6	+11.6	0.14
Total	26.0	58.6	+32.6	8.9e <sup>-16</sup>

Table 1: Survey Results



Graph 1: Survey Results Pre and Post Intervention

Observed PPE	Pre-Intervention % (n=51)	Post-Intervention % (n=31)	Change in Percentage (%)	p-value
Observed PPE	84.3	96.8	+12.5	0.044

Table 2: Covert Observations

## Conclusions

The culture of hand hygiene and use of PPE is of utmost importance in prevention of HAIs. As demonstrated by this nested study, there is a basic lack of PPE knowledge, which corresponds to the clinical practice. Feedback on the surveys emphasized a need for proper equipment availability, better visual signs and the compliance of attending physicians to guide the team, which creates an overall atmosphere in adhering to PPE use. The PowToon video bridged the knowledge gap and resulted in a greater compliance as demonstrated by the surveys. Improving knowledge does not always improve clinical practice. Hence, we used stealth observations to validate the improvement in PPE. Based on our results, we recommend the use of unique modalities such as PowToon and ongoing observations to educate and encourage the use of PPEs in healthcare settings.

## Next Steps

This is a nested study and as such research is ongoing at Blake Medical Center. We continue to encourage healthcare professionals to abide by strict PPE usage to prevent HAIs.

## References

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