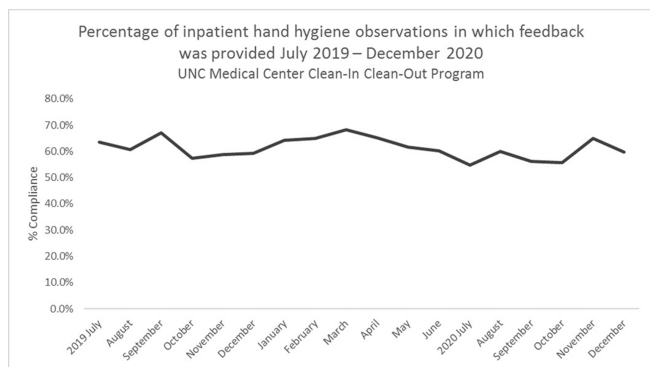Figure 1.

Figure 2.

well-established Clean-In Clean-Out (CICO) program for hand hygiene observations was sustainable throughout a public health and healthcare crisis and whether the COVID-19 pandemic had an effect on hand hygiene compliance. **Methods:** UNC Medical Center utilizes a crowd-sourced hand-hygiene audit application, CICO, to track hand-hygiene observations, compliance, and feedback. This application encourages participation from all staff and promotes providing real-time feedback in the form of a compliment or reminder when performing hand hygiene observations. During this evaluation, hand hygiene data were queried from the CICO application on the number of observations performed, hand hygiene compliance percentage, and feedback compliance percentage from July 2019 to December 2020. Hand hygiene data were compared to patient volumes in different care settings and the number of hospitalized patients being treated for COVID-19. **Results:** Initial increases in hand hygiene observations, compliance, and feedback were detected in the months leading up to UNC Medical Center receiving its first SARS-CoV-2–positive patient. Observations were highest when patient volumes were low due to closed clinics and restrictions on elective surgeries (Figure 1). When patient volumes returned to pre–COVID-19 levels coupled with treating more COVID-19 patients, the number of observations and compliance rate metrics declined. Feedback compliance percentage remained relatively stable through the entire period (Figure 2). **Conclusions:** Despite the additional strain on healthcare staff during COVID-19, the CICO model was a sustainable method to track hand hygiene observations and compliance. Notably, however, engagement was highest when patient census was lower, demonstrating that operating at a high capacity is not beneficial for patient safety. Due to the success and sustainment of the CICO program, UNC Medical Center used this model to create a Mask-On Mask-Up campaign to engage staff to submit observations, track compliance, and encourage feedback to promote the appropriate use of masks during COVID-19.
Funding: No
Disclosures: None

Appropriate Number of Observations to Determine Hand Hygiene Compliance Among Healthcare Workers
Se Yoon Park; Eunjung Lee; Suyeon Park; Tae Hyong Kim and Sungho Won

Background: We sought to determine the minimum number of observations needed to determine hand hygiene (HH) compliance among healthcare workers. **Methods:** The study was conducted at a referral hospital. We retrospectively analyzed the result of HH monitoring from January to December 2018. HH compliance was calculated by dividing the number of observed HH actions by the total number of opportunities. Appropriate HH compliance rates were calculated based on the 6-step technique, modified from the World Health Organization (WHO) recommendation. The minimum number of required observations (n) was calculated by the following equation using overall mean value (r), absolute precision (d), and confidence interval (1-α) [The equation: $n^3 \, Z\alpha/22 \times \rho \times 1-\rho/d2$]. We considered ds of 5%, 10%, 20%, and 30%, with CIs of 99%, 95%, and 90%, respectively. Among the various cases, we focused on 10% for d and 95% for CI. **Results:** During the study period, 8,791 opportunities among 1,168 healthcare workers were monitored. The mean HH compliance and appropriate HH compliance rates were 80.3% and 59.7%, respectively (Table 1). The minimum number of observations required to determine HH compliance rates ranged from 2 (d, 30%; CI, 90%) to 624 (d, 5%; CI, 99%), and the minimum number of observations for optimal HH compliance ranged from 5 (d, 30%, CI, 90%) to 642 (d, 5%; CI, 99%) (Figure 1). At 10% absolute precision with 95% confidence, the minimum number of observations to determine HH and optimal HH compliance were 61 and 92, respectively. **Conclusions:** The minimum number of observations to determine HH compliance varies widely according to setting, but at least 5 were needed to determine optimal HH compliance.
Funding: No
Disclosures: None

Table 1. Mean hand hygiene and optimal hand hygiene compliance in terms of job category and year quarter.

	Number of observations	Healthcare workers	Mean, median (IQR) HH compliance	p-value[a]	Mean, median (IQR) optimal HH compliance	p-value[†]
Total	8791	2507	80.3, 100 (66.7–100)		59.7, 75 (0–100)	
Job category				< 0.001		< 0.001
Nurse	4090	1249	90.9, 100 (100–100)		78.6, 100 (62.5–100)	
Doctor	2843	742	62.2, 71.4 (33.3–100)		27.6, 0 (0–50)	
Other	1858	516	80.8, 100 (66.7–100)		60.2, 75 (0–100)	
Quarter				0.011		< 0.001
First	2586	615	80.0, 100 (66.7–100)		59.6, 72.7 (0–100)	
Second	1805	598	78.9, 100 (60–100)		59.8, 80 (0–100)	
Third	2352	673	78.8, 100 (66.7–100)		59.1, 75 (0–100)	
Fourth	2048	621	83.7, 100 (80–100)		60.6, 80 (0–100)	

IQR, interquartile range; HH: hand hygiene.

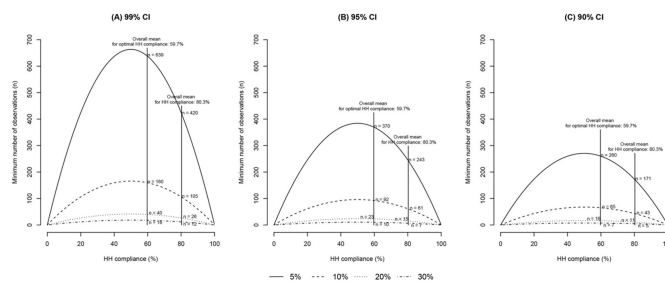[a] p-value determined through generalized estimating equation.

Figure 1. Minimum number of observations for determining hand hygiene compliance for absolute precisions of 5, 10, 20, and 30%, at confidence intervals of (A) 99%, (B) 95%, and (C) 90%.

Figure 1.