RESULTS

Direct Observation vs PUR (ICU)

Direct Observation vs PU% (ICU)

INTRODUCTION

Direct observation (DO) is the current standard for evaluating hand hygiene (HH) compliance but is labor-intensive and may overestimate compliance. Calculating HH rates indirectly by measuring sanitizing product use may be used to approximate HH compliance¹.

OBJECTIVE

To characterize the correlation between HH compliance measured by DO and product usage data collected over three fiscal quarters.

METHODS

- Setting: 713 bed academic tertiary care center in Boston, MA.
- Study Design: HH compliance by DO and product usage data were collected retrospectively from October 2010 through June 2014 for all hospitals except OB/Gyn, neonatology, and psychiatric units.
- Direct Observation Percentage (DO%): DO was performed by trained independent observers who recorded HH upon room entry/exit for at least 30 minutes to obtain an average percent compliance. Observations were performed 3-4 times quarterly in intensive care units (ICUs) and 3-4 times yearly in medical/surgical units (non-ICUs).
- Product Usage Rate (PUR): Empty soap and alcohol hand rub containers were collected and counted weekly. HH events were calculated as the volume of product used divided by the standard amount per HH event (17cc for alcohol-based sanitizer and 17cc for liquid soap). PUR was calculated as the number of HH events per patient day for each unit and quarter.
- Product Usage Percentage (PU%): A standardized PU% was calculated as the percentage of each product divided by a standard rate based on a prior 3-month traffic study (120 HH events per patient day for non-ICUs and 240 for ICUs).
- Analysis: The 3 parameters were obtained for all the fiscal quarters of each unit. PUR and PU% were correlated to DO% using linear regression and generalized linear models, controlling for unit type and fiscal quarter.

RESULTS

Data was obtained for 21 units (7 ICUs, 14 non-ICUs) during 15 fiscal quarters. 105 unit-quarter periods had data for all 3 HH parameters and were included in the analysis: 69 (65.7%) from ICUs and 36 (34.3%) from non-ICUs.

- Mean patient occupancy was 717.7 patient days/quarter in ICUs (range: 514 to 1167) and 2401.5 patient days/quarter in non-ICUs (range: 1783 to 2965).
- Overall, DO% ranged from 38.3% to 95.5% (median 83.3%), PUR ranged from 31.8 to 437.0 HH/patient day (median 203.7), and PU% ranged from 26.8 to 100% (median 86.7%). All 3 HH parameters were significantly higher in ICUs.
- HH compliance measured as DO%, PUR and PU% increased over time in ICUs and was relatively stable in non-ICUs (See Figures 1 and 2).
- There was a significant positive correlation between DO% and PU% and DO% with PUR in non-ICUs (r²=0.532; p<0.001, and DO% with PUR (r²=0.529, p<0.001) for the whole sample, but significant interaction by unit type was observed.
- When stratified by unit type, correlations of DO% with PUR and DO% with PUR (adj usted by unit type) remained strong for non-ICUs (r²=0.50, p<0.001, coef=1.13; and r²=0.43, p<0.001, coef=0.16 respectively).
- There was no correlation between parameters in ICUs (r²=0.01, p=0.491, coef=0.21; and r²=0.03, p=0.161, coef=0.21 respectively).

CONCLUSIONS

- In general, HH compliance measured by DO correlates well with HH measured by product usage as cycle rates or standardized percentages. The latter allows presentation of data that is more easily interpreted by front-line staff.
- A weaker correlation in units with high HH compliance or in ICUs was observed and may highlight the need for more discriminating methods to measure HH compliance in top performing units.