



# hand hygiene

By Paul Alper

## Calculating the True Cost of 200 Direct Observations Per Unit Per Month in 7 Steps

■ The purpose of the study was, for the first time, to determine hand hygiene opportunities (HHOs) in 2 types of hospitals – teaching and community within three clinical areas: medical-surgical units, intensive care units and emergency departments.

With the Leapfrog hand hygiene standard requiring 200 direct observations per unit per month for inpatient units; up to 200 observations per month for emergency department units based on the number of visits per month and up to 200 observations per unit per month for areas where the monthly occupancy rate fluctuates<sup>1</sup> (e.g., PACU, outpatient units), many healthcare organizations are trying to calculate real the costs of direct observation as required to meet the standard.

Fortunately, there is an evidence-based calculation for the true cost of those 2,400 visual observations per unit per year based on the HOW2 (Hand Hygiene Opportunities Where and When) Benchmark Study,<sup>2</sup> published in *AJIC* in 2011.

The purpose of the study was, for the first time, to determine hand hygiene opportunities (HHOs) in 2 types of hospitals - teaching and community within three clinical areas: medical-surgical units, intensive care units and emergency departments. The study used trained direct observers, controlled for inter-rater reliability, to calculate the actual number of HHOs per patient day.

This column will focus on calculating the costs for in-patient areas. Because patient census in outpatient areas and emergency departments is so variable, we will use a conservative plus up factor estimate of 15 percent for these areas, but the data is there to do exact calculations based on your organizations actual statistics to gain that level of precision, should you wish to do so.

The study determined the number of HHOs in Adult Medical Units and ICUs (Table 1). Note that

the study looked for WHO 5 Moment total HHOs but also broke the data down by moment, so we can calculate that “In and Out” HHOs in and Adult Medical unit equals 48.9 percent of the total.

From here, we just need to know the true, fully loaded cost for the staff doing the observations along with the total number of units and average bed counts for each and we can then calculate the cost per year of meeting the 200 visual observations per unit per month.

The following calculations are based on two real hospitals, a teaching hospital and a community hospital. The bed counts and labor costs were provided by senior nursing leadership. The calculations were done based on the “in and out” standard for measuring hand hygiene, as most hospitals are unable to conduct accurate visual observations for the WHO 5 Moments.

### The Teaching Hospital

There are 328 medical unit beds in 19 units with an average of 17.3 beds per medical unit. There are also 54 ICU beds in six units with an average of nine beds per ICU. Their average cost for their nursing staff direct observers is \$42 per hour with benefits.

Here is the calculation which you can easily re-create for your organization:

### Medical Units

**Step 1:** Divide the HHOs per patient day of 35 by 24 to get the HHOs per patient hour, in this case = 1.5

**Step 2:** Multiply that by the average number of beds per medical unit, in this case 17.3, to get the HHOs per unit hour = 25.2.

TABLE 1 - HHOs per Patient Day in Multiple Settings				
Hospital Type	WHO 5 Moment HHOs/Patient Day: Adult Medical Unit	WHO 5 Moment HHOs/Patient Day: Adult ICU	“In and Out” HHOs/ Patient Day: Adult Medical Unit	“In and Out” HHOs/ Patient Day: Adult ICU
Teaching Hospital	71.6	178.8	35.0	87.4
Community Hospital	30.3	70.9	14.8	34.7

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Summary Table		
Cost to Meet the 200 Observations Per Unit per Month Calculator	Teaching Hospital	Community Hospital
# Medical Units	<b>19</b>	<b>10</b>
# ICUs	<b>6</b>	<b>1</b>
Hourly Cost with Benefits	<b>\$42</b>	<b>\$42</b>
Cost Medical Units/Year	<b>\$94,856.57</b>	<b>\$153,454.16</b>
Cost ICUs/Year	<b>\$23,057.60</b>	<b>\$4,845.67</b>
Subtotal/Year	<b>\$117,914.17</b>	<b>\$158,299.83</b>
Estimated factor for ED, outpatient and other patient care areas + 15%	<b>\$17,687.13</b>	<b>\$23,744.97</b>
<b>Grand Total/Year</b>	<b>\$135,601.30</b>	<b>\$182,044.81</b>

Knowing the real cost of deploying professional, properly trained staff to meet the standard will help you accurately compare these costs to other options such as e-monitoring to assess which will provide the most robust, accurate, timely and actionable data for your organization.

**Step 3:** Divide that into 200 (the target direct observations per unit per month) to get the number of hours needed for 200 observations per unit per month = 7.9.

**Step 4:** Multiply that by 12 to get the total number of hours per year needed to achieve the standard for just the observations alone = 95.1; then multiply this by a + factor you think is reasonable for the administrative time to plug the calculations into a spread sheet, create reports, review and distribute them etc., we will use 25 percent for administrative and non-observational time required = 118.9 hours needed per medical unit per year to achieve the Leapfrog standard.

**Step 5:** Multiply this number of hours per year by the total number of medical units (19) by the rate per hour (\$42) = \$94,856.57 per year for the total cost of 200 direct observations per unit per month.

**Step 6:** Repeat these steps for the ICUs, and you find that the total cost per year to meet the standard = \$23,057.60.


**Step 7:** Total these two amounts and add a plus up factor of 15% for outpatient areas, other patient care areas and EDs and you get a grand total of \$135,601.30 per year.

#### The Community Hospital

Applying the same seven steps using the HHOs for the community hospital you will find that the total cost is \$182,044.81 (due to fewer number of opportunities per hour, it takes much more time to capture the requisite number of observations thus the higher cost).

Knowing the real cost of deploying professional, properly trained staff to meet the standard will help you accurately compare these costs to other options such as e-monitoring to assess which will provide the most robust, accurate, timely and actionable data for your organization.

Disclosure: Medline is a 2021 member of the Leapfrog Partners Advisory Committee and has a collaborative relationship with a company that offers electronic hand hygiene monitoring services.

Let me know what you think and please send me your specific hand hygiene challenges, frustrations and nagging problems – I'll share ideas that might be of interest in this monthly column [paul@next-levelstrategies.com](mailto:paul@next-levelstrategies.com). Connect with me on [LinkedIn](#). Also, please write to me for any help in creating your own calculator in Excel. 

*Paul Alper, BA, led the launch of PURELL®, invented the first electronic hand hygiene monitoring system proven to reduce infections while improving behavior and eliminating costs and is now the vice president of patient safety innovation for Medline Industries, Inc. through an exclusive engagement with his consulting practice, Next Level Strategies, LLC.*

#### References:

1. Leapfrog Group. (2020, April 13). Leapfrog Hospital Survey. Retrieved from [https://www.leapfroggroup.org/sites/default/files/Files/2020HospitalSurvey\\_20200413\\_8.1%20%28version%201%29.pdf](https://www.leapfroggroup.org/sites/default/files/Files/2020HospitalSurvey_20200413_8.1%20%28version%201%29.pdf)
2. Steed C, Kelly JW, Blackhurst DW, Boeker S, Diller T, Alper P. Hospital hand hygiene opportunities: where and when (HOW2)? The HOW2 benchmark study. (2011) Am J Infect Control;39:19-26.