Reviewer's report

Title: An intervention study to improve hand hygiene in the emergency department: getting to the point

Version: 2 Date: 20 February 2013

Reviewer: Arjun Venkatesh

Reviewer's report:

General Comments

In general, this manuscript begins to address an important question regarding HH practices, however the authors do not adequately describe the knowledge gap they address or take full advantage of their findings. This study was conducted as part of a QI initiative, and therefore does not represent a prospective observational study of practices, but rather an interesting approach to improving compliance by reducing avoidable HH opportunities. This entire work should be re-framed under that fundamental opportunity for improvement and provide more detail regarding methods in order to make a more meaningful contribution to the literature.

Major Revisions:

Introduction:
1. Authors should not note a primary goal as a precise analysis of ED HH since their sampling method is not suitable for that objective.

Methods:
1. How was the sampling method designed—the authors should describe why 5 consecutive patients was considered a reasonable convenience sample as well as how the 25 and 50 subgroups were developed
2. Unclear to me the timeline of improvement interventions and findings—a timeline based graph of Hh compliance with arrows for each intervention would help
3. Was the sample size constant across periods?

Results:
1. Need to report study period (each phase) level descriptive statistics
2. Need to report the number of HH episodes or healthcare workers (HCWs) observed, the number of observation periods and the distributions of number and types of HCWs observed

Discussion
1. The interesting finding here is not that HR use increased (it barely did) but rather that HH compliance can be significantly improved by reducing avoidable
HH opportunities—most previous literature works on increasing the numerator in compliance and not decreasing the denominator

2. Need to mention potential unintended consequences of providing feedback and audit to decrease HH opportunities: procedures may be done with incorrect tools, HCW may feel validated to spend less time at bedside, HCWs may do more cursory exams to avoid body fluids, etc

Limitations:
1. Should include mention of Hawthorne effect especially since only a single observer was used.
2. Please add that observed has no validation done to demonstrate observation proficiency and accuracy—ideally double observer with measure of agreement would be used
3. Issue of sustainability should be further discussed as opposed to mentioned in brief, this is especially true since the 6 week observational periods used are very short

Minor Revisions:

Methods:
1. Why were patient groups created as a study parameter? Is there evidence to suggest variation in practices across different patient groups in the ED? Was the definition used to group patients previously validated or published?
2. The number and placement of HR dispensers has been shown to impact HH—were any environmental changes made during the study period? How were HH opportunities assessed if the HR dispenser could not be seen by the observer due to a curtain or door or angle?

Results
1. The first line is unclear to me: how can the sample size be observed to decline? Also how can the 1664 be observed to decrease? Isn’t this just reporting total sample size as 5674 opportunities and overall compliance across the study as (1664/5674)=29%. If this is the case this should be reported as a very notably finding much lower than any previous ED estimate
2. Please report p-value of the chi-square test for trend whenever noting a “significant” increase over a time period
3. When reporting lower avoidable HH opportunities and lower glove use—please include point estimates in text at minimum
4. Add flowchart as supplemental exhibit—otherwise it is hard for reviewers and readers to understand the extent of the intervention, its feasibility and generalizability

Discussion:
1. The statement that “the higher the necessity the lower the compliance” is a littler pejorative and I don’t think conveys your goal of communicating that current
workflow patterns make the most important moments for HH the most vulnerable to poor compliance.

2. It is worth mention that this study found a similar inverse relationship between glove use and HH but not worth so much of the discussion as this is not novel—instead focus on the reduction in opportunities as a potential way to conceptually improve compliance

Discretionary Revisions:

Introduction:
1. Consider softening language regarding existing literature from “scare” to “limited” or something similar
2. Consider using HH for hand hygiene instead of HR as it is more conventional in the literature

Conclusions:
1. Costs are not measures so cost based conclusions cannot be made, however this paper can describe increasing efficiency as a mechanism for improvement

**Level of interest:** An article of importance in its field

**Quality of written English:** Needs some language corrections before being published

**Statistical review:** Yes, but I do not feel adequately qualified to assess the statistics.

**Declaration of competing interests:**

I declare that I have no competing interest