

**Presentation Type:**

Poster Presentation

**Using a Human Factors Framework to Assess Clinician Perceptions of and Barriers to High Reliability in Hand Hygiene**

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**Background:** Hand hygiene is essential to prevent healthcare-associated infections, but adherence among clinicians remains low.**Objective:** We used a human factors framework to understand clinician perceptions of and barriers to achieving high reliability in hand hygiene. **Methods:** The Systems Engineering Initiative for Patient Safety 2.0 model was used to develop a 24-item electronic survey. Perceived barriers to hand hygiene were classified into several domains: technology and tools, person, organization, tasks, environment, and care processes. After pilot testing, the survey was distributed to a stratified random sample of attending physicians, nurse practitioners, and physician assistants in medical specialties and surgery-anesthesia at a quaternary-care pediatric hospital. Frequencies, percentages, and descriptive statistics were used to summarize responses. **Results:** Of 200 clinicians, 61 (31%) responded to the survey: 74% were attending physicians, 18% were nurse practitioners, and 7% were physician assistants. Moreover, 51% of respondents represented medical specialties, and 49% came from surgical disciplines or anesthesia. Respondents had served a median 12 years (IQR, 5–19 years) in their current role. Overall, 70% perceived hand hygiene to be “essential” among patient safety issues at the institution, and 84% agreed that leadership openly promotes hand hygiene. Additionally, 97% believed personal hand hygiene efforts were effective in preventing healthcare-associated infections. The availability of alcohol-based hand rub and being a good example for colleagues were perceived as “very effective” in permanently improving hand hygiene reliability by most respondents (87%

and 67%, respectively). Furthermore, 77% of clinicians reported alcohol-based hand rub dispensers to be “sometimes” or “often” empty; 52% cited distractions in the workplace as hindrances to hand hygiene; and 21% reported that peers do not openly promote hand hygiene. One-quarter of the respondents indicated that the layout of patient care areas was not conducive to performing hand hygiene. Staffing shortages and the pace and demands of work precluded hand hygiene for 15% and 11% of respondents, respectively.

**Conclusions:** Most clinicians view hand hygiene as essential to patient safety, but aspects of organizational culture, environment, tasks, and tools were identified as barriers to high performance reliability. These data can inform efforts to use human factors engineering principles to optimize systems and organizations to more effectively promote hand hygiene.**Funding:** None**Disclosures:** None

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**Using Basic Principles of an Outbreak Investigation to Investigate Fractured Central Venous Catheter Hubs**

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**Background:** Central venous catheters (CVCs) are used to provide necessary vascular access. Mechanical issues with the catheters, such as fractures, result in a break in the sterility of the line, increasing the patient's risk for infection or other adverse events. During a 5-month period in 2018, 15 CVCs (involving 13 patients) were noted to have cracked hubs. **Methods:** An outbreak should be suspected when a number of adverse events occur above the expected rate. We used a standardized process, Association for Professionals**Table 1.**

Steps of the Investigation	Results
1. Confirming presence of outbreak	Retrospective patient event record review.
2. Alerting key stakeholders	Quality, Risk and Safety, Infection Prevention, State Health Department, Food and Drug Administration (FDA)
3. Performing literature review	FDA, MedWatch Reports, List Serves, Journal Reviews
4. Establishing preliminary case definition	Any patient with a CVC
5. Developing methodology for case finding	Safety event recording program
6. Preparing line list and epidemic curve	Date, patient identifiers, type of line, insertion date, removal date, adverse events related to fracture
7. Observing and reviewing potentially implicated patient care activities.	Types of catheters, dressing/tubing change equipment or procedures, substitute products related to backorders.
8. Considering environmental sampling.	Testing various factors that may affect line integrity.
9. Implementing initial control measures.	Discontinue use of implicated catheters; identify substitute.
10. Refining case definition.	Identify other products used in conjunction with CVC.
11. Continuing case finding and surveillance.	Refine tracking process.
12. Reviewing control measures on a regular basis.	Regular meetings, rounding, safety event program.
13. Considering whether an analytic study should be performed.	Consult State Health Department.