Infection Control
Current Awareness Bulletin
May 2018

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Title: Are Identification Badges Worn by Health Care Workers in Intensive Care Units Possible Fomites of Hospital-Acquired Infection?...2018 National Teaching Institute Research Abstracts Presented at the AACN National Teaching Institute in Boston, Massachusetts, May 21-24, 2018.

Citation: American Journal of Critical Care; May 2018; vol. 27 (no. 3)
Author(s): Cadaver, Carol; Patel, Devika

Objective: This study addressed the following research question: Are identification badges worn by bedside health care workers (HCWs) fomites in the transmission of infection to patients in the pediatric cardiothoracic intensive care unit (ICU)?

Background/ Significance: Hospital-acquired infections (HAIs) can result in longer stays, higher health care costs, and increased morbidity and mortality rates in hospitalized patients. Patients younger than 2 years who require care in the ICU have high rates of HAIs. Despite the use of evidence-based infection control measures, outbreaks of HAIs have occurred. Investigation of sources of contamination that increase the transmission of HAIs is needed.

Method: This mixed-method pilot study involved recruitment of 30 HCWs, including physicians, respiratory therapists, and nurses, in a pediatric cardiothoracic ICU. The quantitative measurement involved swabbing HCWs' identification badges and then culturing the wet swabs. The qualitative measurement was a demographic questionnaire regarding the participants' badge-wearing behaviors, to identify possible risk factors for badge contamination.

Results: Of the swab cultures, 46.7% were positive for bacterial growth and 53.3% of cultures showed no growth. Of the positive cultures, 65% grew Staphylococcus species; of these, 90.4% were coagulase negative. All of the bacteria cultured can cause nosocomial infection in immunocompromised patients. Although the HCWs identified various ways of wearing and caring for their identification badges, there did not seem to be a large discrepancy in the percentage of positive cultures among the varied practices.

Conclusion: Microorganisms that can cause HAIs are present on bedside HCWs' identification badges; therefore, these badges are fomites for HAIs. The presence of nosocomial bacteria on identification badges worn by bedside HCWs does present a risk to hospitalized patients; therefore, we suggest taking measures to clean badges and not allow them to contact patients or their surroundings. These measures may assist in decreasing the incidence of HAIs.

Title: The effectiveness of alcohol-based gel for hand sanitising in infection control.

Citation: British Journal of Nursing; Apr 2018; vol. 27 (no. 7); p. 382-388
Author(s): Munoz-Figueroa, Gloria Patricia; Ojo, Omorogieva

Abstract: This article aims to evaluate the evidence relating to the effectiveness of alcohol-based gel for hand sanitising, or 'handrub', in infection control in healthcare settings with particular reference to renal nursing, as this has become pertinent due to the increasing reliance on evidence-based practice. There is a need to implement better infection control strategies and education, to reinforce knowledge among the public, health professionals and those at high risk of infection not only in renal nursing, but also in other areas of practice. Healthcare-associated infections (HCAIs) put patients’ safety at risk, increase morbidity and mortality, extend the length of hospital admission and increase the cost to the NHS. There is evidence that the prevalence of
HCAIs in England can be minimised through the use of different infection control measures. For example, alcohol-based handrub has been found to be associated with minimising the spread of gastrointestinal infections not only in hospital settings, but also in childcare centres. In addition, the UK national guidelines recommend regular handwashing (implementing the right technique) when hands are visibly dirty and hand disinfection with alcohol-based handrub when they are not visibly dirty. This should be before, in between and after different healthcare activities are performed.

Title: An integrative review exploring the perceptions of patients and healthcare professionals towards patient involvement in promoting hand hygiene compliance in the hospital setting.

Citation: Journal of Clinical Nursing; Apr 2018; vol. 27 (no. 7/8); p. 1329-1345

Author(s): Alzyood, Mamdooh; Jackson, Debra; Brooke, Joanne; Aveyard, Helen

Objective: To review patients' and healthcare professionals' perceptions of patient involvement in promoting hand hygiene compliance in the hospital setting.

Background: Initiatives continue to emphasise the importance of involving patients in their safety at the point of care. A patient-centred care approach aimed to empower patients to become active members of the healthcare team. However, understanding the perceptions of patients and healthcare professionals of patient involvement in promoting hand hygiene compliance among healthcare professionals has yet to be fully explored.

Design: Integrative literature review.

Methods: A five-stage review process informed by Whittemore and Knaff's methodology was conducted. MEDLINE and CINAHL were searched for papers published between January 2009–July 2017. Data were extracted manually, organised using NVivo 11 and analysed using thematic analysis.

Results: From an identified 240 papers, 19 papers were included in this review. Thematic analysis revealed two main themes with three related subthemes. Patients were willing to remind healthcare professionals (especially nurses) to wash their hands, healthcare professionals perception towards patients' involvement varied from one study to another. However, an overall positive attitude towards patient involvement was related to how patients asked and how healthcare professionals responded to being asked.

Conclusion: There is limited evidence regarding patients' actual intention to ask healthcare professionals to wash their hands, and some evidence that patients are reluctant to do so. Further research is required to understand this area thoroughly, including which situations patients would feel more empowered to speak up. Relevance to clinical practice: Simple messages promoting patient involvement may lead to complex reactions in both patients and healthcare professionals. It is unclear, yet how patients and staff react to such messages in clinical practice. There is a need for a deeper understanding of how they can work together to support harm free care.

Title: Contact among healthcare workers in the hospital setting: developing the evidence base for innovative approaches to infection control.

Citation: BMC infectious diseases; Apr 2018; vol. 18 (no. 1); p. 184

Author(s): English, Krista M; Langley, Joanne M; McGeer, Allison; Hupert, Nathaniel; Tellier, Raymond; Henry, Bonnie; Halperin, Scott A; Johnston, Lynn; Pourbohloul, Babak
Objective: Nosocomial, or healthcare-associated infections (HAI), exact a high medical and financial toll on patients, healthcare workers, caretakers, and the health system. Interpersonal contact patterns play a large role in infectious disease spread, but little is known about the relationship between healthcare workers’ (HCW) movements and contact patterns within a healthcare facility and HAI. Quantitatively capturing these patterns will aid in understanding the dynamics of HAI and may lead to more targeted and effective control strategies in the hospital setting.

Methods: Staff at 3 urban university-based tertiary care hospitals in Canada completed a detailed questionnaire on demographics, interpersonal contacts, in-hospital movement, and infection prevention and control practices. Staff were divided into categories of administrative/support, nurses, physicians, and "Other HCWs" - a fourth distinct category, which excludes physicians and nurses. Using quantitative network modeling tools, we constructed the resulting HCW "co-location network" to illustrate contacts among different occupations and with locations in hospital settings.

Results: Among 3048 respondents (response rate 38%) an average of 3.79, 3.69 and 3.88 floors were visited by each HCW each week in the 3 hospitals, with a standard deviation of 2.63, 1.74 and 2.08, respectively. Physicians reported the highest rate of direct patient contacts (> 20 patients/day) but the lowest rate of contacts with other HCWs; nurses had the most extended (> 20 min) periods of direct patient contact. "Other HCWs" had the most direct daily contact with all other HCWs. Physicians also reported significantly more locations visited per week than nurses, other HCW, or administrators; nurses visited the fewest. Public spaces such as the cafeteria had the most staff visits per week, but the least mean hours spent per visit. Inpatient settings had significantly more HCW interactions per week than outpatient settings.

Conclusions: HCW contact patterns and spatial movement demonstrate significant heterogeneity by occupation. Control strategies that address this diversity among health care workers may be more effective than "one-strategy-fits-all" HAI prevention and control programs.

Title: The development of hand hygiene compliance imperatives in an emergency department.

Citation: American journal of infection control; Apr 2018; vol. 46 (no. 4); p. 441-447

Author(s): Jeanes, Annette; Coen, Pietro G; Drey, Nicolas S; Gould, Dinah J

Abstract: Monitoring results showing poor hand hygiene compliance in a major, busy emergency department prompted a quality improvement initiative to improve hand hygiene compliance. This study aimed to identify, remove, and reduce barriers to hand hygiene compliance in an emergency department. A barrier identification tool was used to identify key barriers and opportunities associated with hand hygiene compliance. Hand hygiene imperatives were developed and agreed on with clinicians, and a framework for monitoring and improving hand hygiene compliance was developed. Barriers to compliance were ambiguity about when to clean hands, the pace and urgency of work in some areas of the department, which left little time for hand hygiene and environmental and operational issues. Sore hands were a problem for some staff. Expectations of compliance were agreed on with staff, and changes were made to remove barriers. A monitoring tool was designed to monitor progress. Gradual improvement occurred in all areas, except in emergency situations, which require further improvement work.

Conclusions: The context of care and barriers to compliance should be reflected in hand hygiene expectations and monitoring. In the emergency department, the requirement to deliver urgent life-saving care can supersede conventional hand hygiene expectations.
Title: Nudging to improve hand hygiene.

Citation: The Journal of hospital infection; Apr 2018; vol. 98 (no. 4); p. 352-358
Author(s): Caris, M G; Labuschagne, H A; Dekker, M; Kramer, M H H; van Agtmael, M A; Vandenbroucke-Grauls, C M J E

Background: Hand hygiene is paramount to prevent healthcare-associated infections, but improving compliance is challenging. When healthcare workers seldom encounter healthcare-associated infections, they will consider the odds of causing infections through poor hand hygiene negligible. Cognitive biases such as these may induce non-compliance. Nudging, 'a friendly push to encourage desired behaviour', could provide an easily implemented, inexpensive measure to address cognitive biases and thus support hand hygiene interventions.

Objective: To investigate whether behavioural nudges, displayed as posters, can increase the use of alcohol-based hand rub.

Methods: We developed nudges based on a systematic review of previously described cognitive biases, and tested these through a cross-sectional survey among the target audience. We then conducted a controlled before-after trial on two hospital wards, to assess the effect of these nudges on the use of alcohol-based hand rub, measured with electronic dispensers.

Findings: Poisson regression analyses adjusted for workload showed that nudges displayed next to dispensers increased their overall use on one ward [poster 1: relative risk: 1.6 (95% confidence interval: 1.2-2.2); poster 2: 1.7 (1.2-2.5)] and during doctor’s rounds on both wards [poster 1: ward A: 1.7 (1.1-2.6); ward B: 2.2 (1.3-3.8)]. Use of dispensers without adjacent nudges did not increase.

Conclusion: Nudges based on cognitive biases that play a role in hand hygiene, and displayed as posters, could provide an easy, inexpensive measure to increase use of alcohol-based hand rub. When applying nudges to change behaviour, it is important to identify the right nudge for the right audience.

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Citation: British journal of nursing (Mark Allen Publishing); Apr 2018; vol. 27 (no. 7); p. 382-388
Author(s): Munoz-Figueroa, Gloria Patricia; Ojo, Omorogieva

Abstract: This article aims to evaluate the evidence relating to the effectiveness of alcohol-based gel for hand sanitising, or 'handrub', in infection control in healthcare settings with particular reference to renal nursing, as this has become pertinent due to the increasing reliance on evidence-based practice. There is a need to implement better infection control strategies and education, to reinforce knowledge among the public, health professionals and those at high risk of infection not only in renal nursing, but also in other areas of practice. Healthcare-associated infections (HCAIs) put patients' safety at risk, increase morbidity and mortality, extend the length of hospital admission and increase the cost to the NHS. There is evidence that the prevalence of HCAIs in England can be minimised through the use of different infection control measures. For example, alcohol-based handrub has been found to be associated with minimising the spread of gastrointestinal infections not only in hospital settings, but also in childcare centres. In addition, the UK national guidelines recommend regular handwashing (implementing the right technique) when
hands are visibly dirty and hand disinfection with alcohol-based handrub when they are not visibly dirty. This should be before, in between and after different healthcare activities are performed.

**Title:** Risk factors for hospital norovirus outbreaks: impact of vomiting, genotype, and multi-occupancy rooms.

**Citation:** The Journal of hospital infection; Apr 2018; vol. 98 (no. 4); p. 398-403

**Author(s):** Fraenkel, C J; Inghammar, M; Söderlund-Strand, A; Johansson, P J H; Böttiger, B

**Objective:** Norovirus is frequently introduced to the hospital and is a frequent cause of hospital outbreaks. Recognition of the factors that facilitate or impede norovirus transmission is an important step to effectively prevent hospital outbreaks. This study aims to investigate risk factors for norovirus outbreaks in hospital settings.

**Methods:** Clinical data, ward setting, and norovirus genotype were collected from all 65 norovirus-positive index cases in outbreaks and all 186 sporadic norovirus cases at 192 wards in southern Sweden during 2010-2012 in a nested case-control study. Uni- and multivariate statistical analyses were conducted.

**Findings:** Outbreak was independently associated with the number of patients sharing a room with the norovirus case (odds ratio (OR): 1.9 per additional patient in the room; P 80 years (OR: 3.2; P < 0.01), comorbidity (OR: 2.3; P = 0.05), and onset of symptoms after admission to the ward (OR: 3.5; P < 0.01) in the multivariate analysis. Infection with genotype GII.4 was found to be strongly associated with outbreak in the univariate analysis (OR: 5.7; P < 0.01). Moreover, associations between GII.4 and vomiting (OR: 2.5; P = 0.01) and old age (OR: 4.3: P < 0.01) were found.

**Conclusion:** This is the first study to investigate clinical, ward and genotype risk factors for norovirus hospital outbreaks. Recognition of these factors may help direct and prioritize infection control actions based on the outbreak risk. The results also suggest that the outbreak association with GII.4 partly may be explained by an enhanced ability to induce vomiting.

**Sources Used**
The following databases are searched on a regular basis in the development of this bulletin:

- British Nursing Index
- Cinahl
- Medline

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